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Contents

Intelle	ectual Property Rights	2
Forev	vord	2
Moda	ıl verbs terminology	2
Forev	vord	46
1	Scope	47
2	References	
3	Definitions, symbols and abbreviations	
3.1	Definitions	
3.2	Symbols	
3.3	Abbreviations	
3.4	Test tolerances	
3.5	Additional notation	
3.5.1	Groups of bands	53
3.6	General	53
3.6.1	Applicability of requirements in this specification version	53
4	E-UTRAN RRC_IDLE state mobility	
4.1	Cell Selection	
4.2	Cell Re-selection	
4.2.1	Introduction	
4.2.2	Requirements	
4.2.2.1	17200001011101110 UNIO 0 7 MIGUALIONI OI DOI 7 MIG	
4.2.2.2		
4.2.2.3	1 2	
4.2.2.4 4.2.2.5	1,	
4.2.2 4.2.2.:		
4.2.2 4.2.2.:		
4.2.2.5 4.2.2.5		
4.2.2.5		
4.2.2.5		
4.2.2.6		
4.2.2.7		
4.2.2.8		
4.2.2.9		
4.2.2.9		
4.2.2.	1 0	
4.2.2.		
4.2.2.	10.2 Reselection from a non CSG to an inter-RAT UTRAN FDD CSG cell	65
4.3	Minimization of Drive Tests (MDT)	66
4.3.1	Introduction	67
4.3.2	Measurements	67
4.3.2.1		
4.3.3	Relative Time Stamp Accuracy	
4.3.3.1		
4.3.4	Relative Time Stamp Accuracy for RRC Connection Establishment Failure Log Reporting	
4.3.4.1	1	
4.3.5	Relative Time Stamp Accuracy for Radio Link Failure and Handover Failure Log Reporting	
4.3.5.	<u>.</u>	
4.4	MBSFN Measurements	
4.4.1 4.4.2	Introduction	
4.4.2 4.4.3	MBSFN RSRP measurements	
4.4.3 4.4.4	MBSFN RSRQ measurements	
4.4.4 4.5	Proximity-based Services	

4.5.1	Introduction	69
4.5.2	Requirements	
4.5.2.1	Interruptions with ProSe Direct Discovery	
4.5.2.2	Interruptions with ProSe Direct Communication	
4.5.2.3	Initiation/Cease of SLSS transmissions with ProSe Direct Discovery	
4.5.2.4	Initiation/Cease of SLSS transmissions with ProSe Direct Communication	
	UTRAN RRC_CONNECTED state mobility	
5.1	E-UTRAN Handover	71
5.1.1	Introduction	
5.1.2	Requirements	
5.1.2.1	E-UTRAN FDD – FDD	71
5.1.2.1.1	Handover delay	71
5.1.2.1.2	Interruption time	71
5.2.2.2	E-UTRAN FDD – TDD	71
5.2.2.2.1	(Void)	72
5.2.2.2.2	(Void)	72
5.2.2.3	E-UTRAN TDD – FDD	72
5.2.2.3.1	(Void)	72
5.2.2.3.2	(Void)	72
5.2.2.4	E-UTRAN TDD – TDD	72
5.2.2.4.1	Handover delay	
5.2.2.4.2	Interruption time	
5.2.2.5	E-UTRAN HD – FDD	
5.2.2.5.1	Handover delay	
5.2.2.5.2	Interruption time	
5.3	Handover to other RATs	
5.3.1	E-UTRAN - UTRAN FDD Handover	
5.3.1.1	Introduction	
5.3.1.1.1	Handover delay	
5.3.1.1.2	Interruption time	
5.3.2	E-UTRAN - UTRAN TDD Handover	
5.3.2.1	Introduction	
5.3.2.2	Requirements	
5.3.2.2.1	Handover delay	
5.3.2.2.2	Interruption time	
5.3.3	E-UTRAN - GSM Handover	
5.3.3.1	Introduction	
5.3.3.2	Requirements	
	Handover delay	
5.3.3.2.1 5.3.3.2.2		
	Interruption time	
5.4	Handover to Non-3GPP RATs	
5.4.1	E-UTRAN – HRPD Handover	
5.4.1.1	Introduction	
5.4.1.1.1	Handover delay	
5.4.1.1.2	Interruption time	
5.4.2	E-UTRAN – cdma2000 1X Handover	
5.4.2.1	Introduction	
5.4.2.1.1	Handover delay	
5.4.2.1.2	Interruption time	
6 R	RC Connection Mobility Control	78
6.1	RRC Re-establishment	
6.1.1	Introduction.	
6.1.2	Requirements	
6.1.2.1	UE Re-establishment delay requirement	
6.2	Random Access	
6.2.1	Introduction.	
6.2.2	Requirements	
6.2.2.1	Contention based random access	
6.2.2.1.1	Correct behaviour when receiving Random Access Response reception	
6.2.2.1.1	Correct behaviour when not receiving Random Access Response reception	
	COLLECT CONGLICAL WHOM HOT ICCOLVING IXGRADIN / ICCOS IXCSDUNG ICCOLUNCII	

6.2.2.1.3	Correct behaviour when receiving a NACK on msg3	
6.2.2.1.4	Void	
6.2.2.1.5	Correct behaviour when receiving a message over Temporary C-RNTI	79
6.2.2.1.6	Correct behaviour when contention Resolution timer expires	79
6.2.2.2	Non-Contention based random access	80
6.2.2.2.1	Correct behaviour when receiving Random Access Response	80
6.2.2.2.2	Correct behaviour when not receiving Random Access Response	80
6.3	RRC Connection Release with Redirection	80
6.3.1	Introduction	80
6.3.2	Requirements	80
6.3.2.1	RRC connection release with redirection to UTRAN FDD	80
6.3.2.2	RRC connection release with redirection to GERAN	80
6.3.2.3	RRC connection release with redirection to UTRAN TDD	81
6.4	CSG Proximity Indication for E-UTRAN and UTRAN	81
6.4.1	Introduction	81
6.4.2	Requirements	82
7 Tr:	india and signating shows stanistics	0.7
	iming and signalling characteristics	
7.1 7.1.1	UE transmit timing	
, , _ , _	Introduction	
7.1.2	Requirements	
7.2	UE timer accuracy	
7.2.1	Introduction	
7.2.2	Requirements	
7.3	Timing Advance	
7.3.1	Introduction	
7.3.2	Requirements	
7.3.2.1 7.3.2.2	Timing Advance adjustment delay	
7.3.2.2 7.4	Timing Advance adjustment accuracy	
7.4 7.4.1	Cell phase synchronization accuracy (TDD)	
7.4.1 7.4.2	Minimum requirements	
7.4.2 7.5	Synchronization Requirements for E-UTRAN to 1xRTT and HRPD Handovers	
7.5.1	Introduction	
7.5.1 7.5.2	eNodeB Synchronization Requirements	
7.5.2.1	Synchronized E-UTRAN	
7.5.2.1	Non-Synchronized E-UTRAN	
7.5.2.2 7.6	Radio Link Monitoring	
7.6.1	Introduction.	
7.6.2	Requirements	
7.6.2.1	Minimum requirement when no DRX is used	
7.6.2.2	Minimum requirement when DRX is used	
7.6.2.3	Minimum requirement at transitions	
7.6.2.4	Minimum requirement during SI Acquisition with autonomous gaps	
7.6.2.5	Minimum requirement under IDC Interference	
7.7	SCell Activation and Deactivation Delay for E-UTRA Carrier Aggregation	
7.7.1	Introduction.	
7.7.2	SCell Activation Delay Requirement for Deactivated SCell	
7.7.3	SCell Deactivation Delay Requirement for Activated SCell	
7.7.4	SCell Activation Delay Requirement for Deactivated SCell with Muliple Downlnk SCells	
7.7.5	SCell Deactivation Delay Requirement for Activated SCell with Multiple Downlink SCells	
7.7.6	SCell Activation Delay Requirement for Deactivated PUCCH SCell	
7.7.7	SCell Activation Delay Requirement for Deactivated PUCCH SCell with Multiple SCells	
7.7.8	SCell Deactivation Delay Requirement for Activated PUCCH SCell	
7.7.9	SCell Deactivation Delay Requirement for Activated PUCCH SCell with Multiple SCells	
7.7.10	SCell Activation Delay Requirement for Deactivated SCell under Frame Structure 3	
7.7.11	SCell Deactivation Delay Requirement for Activated SCell under Frame Structure 3	
7.7.12	SCell Activation Delay Requirement for Deactivated SCell with Muliple Downlnk SCells under	
	Frame Structure 3	95
7.7.13	SCell Deactivation Delay Requirement for Activated SCell with Muliple Downlnk SCells under	
	Frame Structure 3	95
7.8	Interruptions with Carrier Aggregation	96

7.8.1	Introduction	96
7.8.2	Requirements	
7.8.2.1	Interruptions at SCell addition/release for intra-band CA	
7.8.2.2	Interruptions at SCell addition/release for inter-band CA	
7.8.2.3	Interruptions at SCell activation/deactivation for intra-band CA	
7.8.2.4	Interruptions at SCell activation/deactivation for inter-band CA	
7.8.2.5	Interruptions during measurements on SCC for intra-band CA	
7.8.2.6	Interruptions during measurements on SCC for inter-band CA	
7.8.2.7	Interruptions at SCell addition/release with multiple downlink SCells	
7.8.2.8	Interruptions at SCell activation/deactivation with multiple downlink SCells	
7.8.2.9	Interruptions during measurements on SCC with multiple downlink SCells	
7.8.2.10	Interruptions at overlapping addition/release/activation/deactivation of SCells	
7.9	Maximum Transmission Timing Difference in Carrier Aggregation	
7.9.1	Introduction	
7.9.2	Minimum Requirements for Interband Carrier Aggregation	
7.9.3	Minimum Requirements for Intraband non-contiguous Carrier Aggregation	99
7.9.4	Minimum Requirements for Inter-Band Carrier Aggregation under Frame Structure 3	
7.10	Interruptions with RSTD Measurements with Carrier Aggregation	
7.10.1	Introduction	
7.10.2	Requirements	
7.10.2.1	Interruptions during RSTD measurements on SCC for intra-band CA with one downlink SCell	
7.10.2.2	Interruptions during RSTD measurements on SCC for inter-band CA with one downlink SCell	
7.10.2.3	Interruptions during RSTD measurements on SCC with multiple downlink SCells	
7.10.2.4	Interruptions at overlapping RSTD and inter-frequency measurements	
7.11	Radio Link Monitoring for UE Category 0	
7.11.1	Introduction	
7.11.2	Requirements for FD-FDD and TDD	
7.11.2.1	Minimum requirement when no DRX is used	
7.11.2.2	Minimum requirement when DRX is used	
7.11.2.3	Minimum requirement at transitions	
7.11.3	Requirements for HD-FDD	
7.11.3.1	Minimum requirement when no DRX is used	
7.11.3.2	Minimum requirement when DRX is used	
7.11.3.3	Minimum requirement at transitions	
7.12	Interruptions with Dual Connectivity	
7.12.1	Introduction	
7.12.2	Requirements	
7.12.2.1	Interruptions at PSCell addition/release	
7.12.2.2	Interruptions at transitions between active and non-active during DRX	
7.12.2.3	Interruptions at transitions from non-DRX to DRX	
7.12.2.4	Interruptions at SCell addition/release	
7.12.2.5	Interruptions at SCell activation/deactivation	
7.12.2.6	Interruptions during measurements on SCC	
	Cell phase synchronization accuracy (Synchronized mode of dual connectivity)	
7.13.1	Definition	
7.13.2	Minimum requirements	
	PSCell Addition and Release Delay for E-UTRA Dual Connectivity	
7.14.1 7.14.2	IntroductionPSCell Addition Delay Requirement	
7.14.2	PSCell Release Delay Requirement	
	Maximum Receive Timing Difference in Dual Connectivity	
7.15 7.15.1	Introduction	
7.13.1 7.15.2	Minimum Requirements for Inter-band Dual Connectivity	
	Proximity-based Services Proximity-based Services	
7.16 7.16.1	Introduction	
7.16.1	Requirements	
7.16.2 7.16.2.1	ProSe UE transmission timing	
7.16.2.1 7.16.2.1.1	Serving cell or PCell as timing reference	
7.16.2.1.1 7.16.3	Interruptions with ProSe	
7.16.3.1	Interruptions at ProSe Direct Discovery configuration	
7.16.3.1	Interruptions at ProSe Direct Discovery configuration	
7.16.3.2	Interruptions during ProSe Direct Discovery	
		0

7.17	Maximum Transmission Timing Difference in Dual Connectivity	.110
7.17.1	Introduction	
7.17.2	Minimum Requirements for maximum transmission timing difference Inter-band Dual Connectivity	.110
7.18	SCell Activation and Deactivation Delay for E-UTRA Dual Connectivity	.111
7.18.1	Introduction	
7.18.2	SCell Activation Delay Requirement for Deactivated SCell	
7.18.3	SCell Deactivation Delay Requirement for Activated SCell	.111
0 115	Managementa Describing in DDC CONNECTED State	111
	Measurements Procedures in RRC_CONNECTED State	
	General Measurement Requirements	
8.1.1	Introduction	
8.1.2	Requirements	
8.1.2.1	UE measurement capability	
8.1.2.1.1	Monitoring of multiple layers using gaps	
8.1.2.1.1a	Monitoring of multiple layers using gaps (Increased UE carrier monitoring)	
8.1.2.2	E-UTRAN intra frequency measurements	
8.1.2.2.1	E-UTRAN FDD intra frequency measurements	
8.1.2.2.2	E-UTRAN TDD intra frequency measurements	
8.1.2.2.3	E-UTRAN FDD intra frequency measurements with autonomous gaps	
8.1.2.2.4	E-UTRAN TDD intra frequency measurements with autonomous gaps	
8.1.2.3	E-UTRAN inter frequency measurements	
8.1.2.3.1	E-UTRAN FDD – FDD inter frequency measurements	
8.1.2.3.2	E-UTRAN TDD – TDD inter frequency measurements	
8.1.2.3.3	E-UTRAN TDD – FDD inter frequency measurements	
8.1.2.3.4	E-UTRAN FDD – TDD inter frequency measurements	
8.1.2.3.5	E-UTRAN FDD-FDD inter frequency measurements with autonomous gaps	
8.1.2.3.6	E-UTRAN TDD-FDD inter frequency measurements using autonomous gaps	
8.1.2.3.7	E-UTRAN TDD-TDD inter frequency measurements with autonomous gaps	
8.1.2.3.8	E-UTRAN FDD-TDD inter frequency measurements using autonomous gaps	
8.1.2.4	Inter RAT measurements	
8.1.2.4.1	E-UTRAN FDD – UTRAN FDD measurements	
8.1.2.4.2	E-UTRAN TDD – UTRAN FDD measurements	
8.1.2.4.3	E-UTRAN TDD – UTRAN TDD measurements	
8.1.2.4.4	E-UTRAN FDD – UTRAN TDD measurements	
8.1.2.4.5	E-UTRAN FDD – GSM measurements	
8.1.2.4.6	E-UTRAN TDD – GSM measurements	
8.1.2.4.7	E-UTRAN FDD – UTRAN FDD measurements for SON	
8.1.2.4.8	E-UTRAN TDD – UTRAN FDD measurements for SON	
8.1.2.4.9	E-UTRAN FDD – cdma2000 1xRTT measurements	
8.1.2.4.9.1		
8.1.2.4.10	E-UTRAN TDD – cdma2000 1xRTT measurements	
8.1.2.4.11	E-UTRAN FDD – HRPD measurements	
8.1.2.4.12	E-UTRAN TDD – HRPD measurements	
8.1.2.4.13	E-UTRAN TDD – UTRAN TDD measurements for SON	
8.1.2.4.14	E-UTRAN FDD – UTRAN TDD measurements for SON	
8.1.2.4.15	E-UTRAN FDD – cdma2000 1xRTT measurements for SON ANR	
8.1.2.4.16	E-UTRAN TDD – cdma2000 1xRTT measurements for SON ANR	
8.1.2.4.17	E-UTRAN FDD-UTRAN FDD measurements with autonomous gaps	
8.1.2.4.18	E-UTRAN TDD-UTRAN FDD measurements with autonomous gaps	
8.1.2.4.19	E-UTRAN FDD – WLAN measurements	.155
8.1.2.4.20	E-UTRAN TDD – WLAN measurements	.157
8.1.2.5	E-UTRAN OTDOA Intra-Frequency RSTD Measurements	
8.1.2.5.1	E-UTRAN FDD Intra-Frequency OTDOA Measurements	
8.1.2.5.2	E-UTRAN TDD Intra-Frequency OTDOA Measurements	
8.1.2.6	E-UTRAN Inter-Frequency OTDOA Measurements	
8.1.2.6.1	E-UTRAN FDD-FDD Inter-Frequency OTDOA Measurements	.160
8.1.2.6.2	E-UTRAN TDD-FDD Inter-Frequency OTDOA Measurements	
8.1.2.6.3	E-UTRAN TDD-TDD Inter-Frequency OTDOA Measurements	
8.1.2.6.4	E-UTRAN FDD-TDD Inter-Frequency OTDOA Measurements	
8.1.2.7	E-UTRAN E-CID Measurements	
8.1.2.7.1	E-UTRAN FDD UE Rx-Tx Time Difference Measurements	.167
81272	E-UTRAN TDD UE Rx-Tx Time Difference Measurements	168

8.1.2.7.3 8.1.2.7.4 8.1.2.8 8.1.2.8.1 8.1.2.8.2 8.1.2.8.3 8.1.2.8.4 8.1.2.9 8.1.2.9.1 8.1.2.9.2 8.1.2.9.3	E-UTRAN FDD Intra-frequency E-CID RSRP and RSRQ Measurements E-UTRAN TDD Intra-frequency E-CID RSRP and RSRQ Measurements E-UTRAN intra-frequency measurements under time domain measurement resource restriction E-UTRAN FDD intra-frequency measurements E-UTRAN TDD intra-frequency measurements E-UTRAN FDD intra-frequency measurements with CRS assistance information E-UTRAN TDD intra-frequency measurements with CRS assistance infromation E-UTRAN E-CID Measurements when Time Domain Measurement Resource Restriction Pattern is Configured.	.170 .170 .170 .173
8.1.2.8 8.1.2.8.1 8.1.2.8.2 8.1.2.8.3 8.1.2.8.4 8.1.2.9 8.1.2.9.1 8.1.2.9.2	E-UTRAN intra-frequency measurements under time domain measurement resource restriction E-UTRAN FDD intra-frequency measurements	.170 .170 .173
8.1.2.8.1 8.1.2.8.2 8.1.2.8.3 8.1.2.8.4 8.1.2.9 8.1.2.9.1 8.1.2.9.2	E-UTRAN FDD intra-frequency measurements E-UTRAN TDD intra-frequency measurements E-UTRAN FDD intra-frequency measurements with CRS assistance information E-UTRAN TDD intra-frequency measurements with CRS assistance information E-UTRAN E-CID Measurements when Time Domain Measurement Resource Restriction Pattern is Configured	.170 .173
8.1.2.8.2 8.1.2.8.3 8.1.2.8.4 8.1.2.9 8.1.2.9.1 8.1.2.9.2	E-UTRAN TDD intra-frequency measurements E-UTRAN FDD intra-frequency measurements with CRS assistance information E-UTRAN TDD intra-frequency measurements with CRS assistance infromation E-UTRAN E-CID Measurements when Time Domain Measurement Resource Restriction Pattern is Configured	.173
8.1.2.8.3 8.1.2.8.4 8.1.2.9 8.1.2.9.1 8.1.2.9.2	E-UTRAN TDD intra-frequency measurements E-UTRAN FDD intra-frequency measurements with CRS assistance information E-UTRAN TDD intra-frequency measurements with CRS assistance infromation E-UTRAN E-CID Measurements when Time Domain Measurement Resource Restriction Pattern is Configured	.173
8.1.2.8.3 8.1.2.8.4 8.1.2.9 8.1.2.9.1 8.1.2.9.2	E-UTRAN FDD intra-frequency measurements with CRS assistance information	
8.1.2.8.4 8.1.2.9 8.1.2.9.1 8.1.2.9.2	E-UTRAN TDD intra-frequency measurements with CRS assistance infromation	.1/0
8.1.2.9 8.1.2.9.1 8.1.2.9.2	E-UTRAN E-CID Measurements when Time Domain Measurement Resource Restriction Pattern is Configured	180
8.1.2.9.1 8.1.2.9.2	Pattern is Configured	.100
8.1.2.9.2		100
8.1.2.9.2		
	E-UTRAN FDD UE Rx-Tx Time Difference Measurements	
8.1.2.9.3	E-UTRAN TDD UE Rx-Tx Time Difference Measurements	.184
	E-UTRAN FDD UE Rx-Tx Time Difference Measurements with CRS Assistance	
	Information	.184
8.1.2.9.4	E-UTRAN TDD UE Rx-Tx Time Difference Measurements with CRS Assistance	
011121711	Information	184
8.2	Capabilities for Support of Event Triggering and Reporting Criteria	
8.2.1	Introduction	
8.2.2	Requirements	
8.3	Measurements for E-UTRA carrier aggregation	
8.3.1	Introduction	
8.3.2	Measurements of the primary component carrier	.187
8.3.3	Measurements of a secondary component carrier	.187
8.3.3.1	Measurements of a secondary component carrier with active SCell	.187
8.3.3.2	Measurements of a secondary component carrier with deactivated SCell	
8.3.3.2.1	E-UTRAN secondary component carrier measurements when no common DRX is used	
8.3.3.2.2	E-UTRAN secondary component carrier measurements when common DRX is used	
8.4	OTDOA RSTD Measurements for E-UTRAN carrier aggregation	
8.4.1	Introduction	
8.4.2	Measurements on the primary component carrier	
8.4.3	Measurements on a secondary component carrier	
8.4.4	Measurements on both primary component carrier and a secondary component carrier	
8.4.5	Measurements on different secondary component carriers	
8.5	Measurements for UE category 0	
8.5.1	Introduction	.194
8.5.2	Requirements	.194
8.5.2.1	E-UTRAN intra frequency measurements	.194
8.5.2.1.1	E-UTRAN FDD intra frequency measurements	.194
8.5.2.1.2	E-UTRAN intra frequency measurements for HD-FDD	
8.5.2.1.3	E-UTRAN TDD intra frequency measurements	
8.5.2.1.4	E-UTRAN FDD intra frequency measurements with autonomous gaps for UE category 0	
8.5.2.1.5	E-UTRAN intra frequency measurements with autonomous gaps for HD-FDD UE category 0.	
8.5.2.1.6	E-UTRAN TDD intra frequency measurements with autonomous gaps for UE category 0	
6.5.2.1.0		
0 6		
8.6	Discovery signal measurements	.204
8.6.1	Introduction	.204
8.6.1 8.6.2	Introduction	.204 .204 .204
8.6.1 8.6.2 8.6.2.1	Introduction	.204 .204 .204 .204
8.6.1 8.6.2 8.6.2.1 8.6.2.1.1	Introduction	.204 .204 .204 .204 .204
8.6.1 8.6.2 8.6.2.1	Introduction	.204 .204 .204 .204 .204
8.6.1 8.6.2 8.6.2.1 8.6.2.1.1	Introduction	.204 .204 .204 .204 .204 .207
8.6.1 8.6.2 8.6.2.1 8.6.2.1.1 8.6.2.1.2	Introduction Requirements for CRS based discovery signal measurements E-UTRAN intra frequency measurements E-UTRAN FDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN inter frequency measurements	.204 .204 .204 .204 .204 .207 .209
8.6.1 8.6.2 8.6.2.1 8.6.2.1.1 8.6.2.1.2 8.6.2.2 8.6.2.2.1	Introduction Requirements for CRS based discovery signal measurements E-UTRAN intra frequency measurements E-UTRAN FDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN inter frequency measurements E-UTRAN FDD – FDD inter-frequency measurements	.204 .204 .204 .204 .207 .207 .209
8.6.1 8.6.2 8.6.2.1 8.6.2.1.1 8.6.2.1.2 8.6.2.2 8.6.2.2.1	Introduction Requirements for CRS based discovery signal measurements E-UTRAN intra frequency measurements E-UTRAN FDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN inter frequency measurements E-UTRAN FDD – FDD inter-frequency measurements E-UTRAN TDD – TDD inter frequency measurements	.204 .204 .204 .204 .207 .209 .209
8.6.1 8.6.2 8.6.2.1 8.6.2.1.1 8.6.2.1.2 8.6.2.2 8.6.2.2.1 8.6.2.2.2 8.6.2.2.3	Introduction. Requirements for CRS based discovery signal measurements E-UTRAN intra frequency measurements E-UTRAN FDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN inter frequency measurements E-UTRAN FDD – FDD inter-frequency measurements E-UTRAN TDD – TDD inter frequency measurements E-UTRAN TDD – FDD inter frequency measurements E-UTRAN TDD – FDD inter frequency measurements	.204 .204 .204 .204 .207 .209 .209 .212
8.6.1 8.6.2 8.6.2.1 8.6.2.1.1 8.6.2.1.2 8.6.2.2 8.6.2.2.1 8.6.2.2.2 8.6.2.2.3 8.6.2.2.4	Introduction. Requirements for CRS based discovery signal measurements E-UTRAN intra frequency measurements E-UTRAN FDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN inter frequency measurements E-UTRAN FDD – FDD inter-frequency measurements E-UTRAN TDD – TDD inter frequency measurements E-UTRAN TDD – FDD inter frequency measurements E-UTRAN TDD – FDD inter frequency measurements E-UTRAN FDD – TDD inter frequency measurements	.204 .204 .204 .204 .207 .209 .209 .212 .215
8.6.1 8.6.2 8.6.2.1 8.6.2.1.1 8.6.2.1.2 8.6.2.2 8.6.2.2.1 8.6.2.2.2 8.6.2.2.3 8.6.2.2.4 8.6.3	Introduction. Requirements for CRS based discovery signal measurements E-UTRAN intra frequency measurements E-UTRAN FDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN inter frequency measurements E-UTRAN FDD – FDD inter-frequency measurements E-UTRAN TDD – TDD inter frequency measurements E-UTRAN TDD – TDD inter frequency measurements E-UTRAN FDD – FDD inter frequency measurements E-UTRAN FDD – TDD inter frequency measurements E-UTRAN FDD – TDD inter frequency measurements	.204 .204 .204 .204 .207 .209 .209 .212 .215 .215
8.6.1 8.6.2 8.6.2.1 8.6.2.1.1 8.6.2.1.2 8.6.2.2 8.6.2.2.1 8.6.2.2.2 8.6.2.2.3 8.6.2.2.4 8.6.3 8.6.3.1	Introduction. Requirements for CRS based discovery signal measurements E-UTRAN intra frequency measurements E-UTRAN FDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN inter frequency measurements E-UTRAN FDD – FDD inter-frequency measurements E-UTRAN TDD – TDD inter frequency measurements E-UTRAN TDD – FDD inter frequency measurements E-UTRAN FDD – TDD inter frequency measurements	.204 .204 .204 .204 .207 .209 .209 .212 .215 .215
8.6.1 8.6.2 8.6.2.1 8.6.2.1.1 8.6.2.1.2 8.6.2.2 8.6.2.2.1 8.6.2.2.2 8.6.2.2.3 8.6.2.2.4 8.6.3 8.6.3.1 8.6.3.1.1	Introduction. Requirements for CRS based discovery signal measurements E-UTRAN intra frequency measurements E-UTRAN FDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN inter frequency measurements E-UTRAN FDD – FDD inter-frequency measurements E-UTRAN TDD – TDD inter frequency measurements E-UTRAN TDD – FDD inter frequency measurements E-UTRAN FDD – TDD inter frequency measurements E-UTRAN FDD intra frequency measurements E-UTRAN FDD intra frequency measurements	.204 .204 .204 .204 .207 .209 .209 .212 .215 .215 .215
8.6.1 8.6.2 8.6.2.1 8.6.2.1.1 8.6.2.1.2 8.6.2.2 8.6.2.2.1 8.6.2.2.3 8.6.2.2.4 8.6.3 8.6.3.1 8.6.3.1.1 8.6.3.1.2	Introduction. Requirements for CRS based discovery signal measurements E-UTRAN intra frequency measurements E-UTRAN FDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN inter frequency measurements E-UTRAN FDD – FDD inter-frequency measurements E-UTRAN TDD – TDD inter frequency measurements E-UTRAN TDD – FDD inter frequency measurements E-UTRAN FDD – TDD inter frequency measurements E-UTRAN FDD – TDD inter frequency measurements E-UTRAN FDD – TDD inter frequency measurements E-UTRAN intra frequency measurements E-UTRAN FDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN TDD intra frequency measurements	.204 .204 .204 .204 .207 .209 .209 .212 .215 .215 .215 .215
8.6.1 8.6.2 8.6.2.1 8.6.2.1.1 8.6.2.1.2 8.6.2.2 8.6.2.2.1 8.6.2.2.2 8.6.2.2.3 8.6.2.2.4 8.6.3 8.6.3.1 8.6.3.1.1 8.6.3.1.2	Introduction. Requirements for CRS based discovery signal measurements E-UTRAN intra frequency measurements E-UTRAN FDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN inter frequency measurements E-UTRAN FDD – FDD inter-frequency measurements E-UTRAN TDD – TDD inter frequency measurements E-UTRAN TDD – FDD inter frequency measurements E-UTRAN FDD – TDD inter frequency measurements E-UTRAN FDD – TDD inter frequency measurements E-UTRAN FDD – TDD inter frequency measurements E-UTRAN intra frequency measurements E-UTRAN FDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN TDD intra frequency measurements	.204 .204 .204 .204 .207 .209 .212 .215 .215 .215 .215 .218 .220
8.6.1 8.6.2 8.6.2.1 8.6.2.1.1 8.6.2.1.2 8.6.2.2 8.6.2.2.1 8.6.2.2.2 8.6.2.2.3 8.6.2.2.4 8.6.3.1 8.6.3.1.1 8.6.3.1.2 8.6.3.2 8.6.3.2.1	Introduction Requirements for CRS based discovery signal measurements E-UTRAN intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN FDD – FDD inter-frequency measurements E-UTRAN TDD – TDD inter frequency measurements E-UTRAN TDD – FDD inter frequency measurements E-UTRAN TDD – FDD inter frequency measurements E-UTRAN FDD – TDD inter frequency measurements E-UTRAN FDD inter frequency measurements E-UTRAN intra frequency measurements E-UTRAN FDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN FDD – FDD inter frequency measurements E-UTRAN FDD – FDD inter frequency measurements	.204 .204 .204 .204 .207 .209 .212 .215 .215 .215 .215 .218 .220 .220
8.6.1 8.6.2 8.6.2.1 8.6.2.1.1 8.6.2.1.2 8.6.2.2 8.6.2.2.1 8.6.2.2.2 8.6.2.2.3 8.6.2.2.4 8.6.3.1 8.6.3.1.1 8.6.3.1.2 8.6.3.2.1 8.6.3.2.1	Introduction Requirements for CRS based discovery signal measurements E-UTRAN intra frequency measurements E-UTRAN FDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN inter frequency measurements E-UTRAN FDD – FDD inter-frequency measurements E-UTRAN TDD – TDD inter frequency measurements E-UTRAN TDD – FDD inter frequency measurements E-UTRAN FDD – TDD inter frequency measurements E-UTRAN FDD – TDD inter frequency measurements E-UTRAN intra frequency measurements E-UTRAN FDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN FDD – FDD inter frequency measurements E-UTRAN FDD – FDD inter frequency measurements E-UTRAN TDD – TDD inter frequency measurements	.204 .204 .204 .207 .209 .212 .215 .215 .215 .215 .218 .220 .220
8.6.1 8.6.2 8.6.2.1 8.6.2.1.1 8.6.2.1.2 8.6.2.2 8.6.2.2.1 8.6.2.2.2 8.6.2.2.3 8.6.2.2.4 8.6.3.1 8.6.3.1.1 8.6.3.1.2 8.6.3.2 8.6.3.2.1	Introduction Requirements for CRS based discovery signal measurements E-UTRAN intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN FDD – FDD inter-frequency measurements E-UTRAN TDD – TDD inter frequency measurements E-UTRAN TDD – FDD inter frequency measurements E-UTRAN TDD – FDD inter frequency measurements E-UTRAN FDD – TDD inter frequency measurements E-UTRAN FDD inter frequency measurements E-UTRAN intra frequency measurements E-UTRAN FDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN TDD intra frequency measurements E-UTRAN FDD – FDD inter frequency measurements E-UTRAN FDD – FDD inter frequency measurements	.204 .204 .204 .207 .209 .212 .215 .215 .215 .218 .220 .220 .223 .223

8.7	Discovery signal massymments for E LITD A semior accuraction	226
	Discovery signal measurements for E-UTRA carrier aggregation	
8.7.1	Introduction.	
8.7.2	Requirements for CRS based discovery signal measurements for E-UTRA carrier aggregation	
8.7.2.1	Measurements of the primary component carrier	
8.7.2.2	Measurements of a secondary component carrier	
8.7.2.3	Measurements of a secondary component carrier with active SCell	
8.7.2.4	Measurements of a secondary component carrier with deactivated SCell	
8.7.2.4.1	E-UTRAN secondary component carrier measurements when no common DRX is used	227
8.7.2.4.2	E-UTRAN secondary component carrier measurements when common DRX is used	228
8.7.3	Requirements for CSI-RS based discovery signal measurements for E-UTRA carrier aggregation	
8.7.3.1	Measurements of the primary component carrier	
8.7.3.2	Measurements of a secondary component carrier	
8.7.3.3	Measurements of a secondary component carrier with active SCell	
8.7.3.4	Measurements of a secondary component carrier with deactivated SCell	
8.7.3.4.1	E-UTRAN secondary component carrier measurements when no common DRX is used	
8.7.3.4.2	E-UTRAN secondary component carrier measurements when common DRX is used	
8.8	Measurements for E-UTRA dual connectivity	
8.8.1	Introduction	
8.8.2	Intra-frequency measurements requirements on PCell	
8.8.3	Intra-frequency measurements requirements on PSCell	
8.8.4	Inter-frequency and inter-RAT measurement requirements	233
8.8.5	Intra-frequency measurements with autonomous gaps	234
8.8.5.1	Identification of a new CGI of E-UTRA cell with autonomous gaps	
8.8.5.2	ECGI reporting delay	
8.8.6	Inter-frequency measurements with autonomous gaps	
8.8.6.1	Identification of a new CGI of E-UTRA cell with autonomous gaps	
8.8.6.2	ECGI reporting delay	
8.8.7	SSTD Measurements for E-UTRA Dual Connectivity	
8.8.7.1	Introduction	
8.8.7.2	SSTD Measurements	
8.8.7.3	SSTD Measurement Reporting Delay	
8.8.8	Intra-frequency measurements requirements on SCell	
8.9	MBSFN Measurements	
8.9.1	Introduction	237
8.9.2	MBSFN RSRP Measurements	237
8.9.3	MBSFN RSRQ Measurements	237
8.9.4	MCH BLER Measurements	238
8.10	Proximity-based Services	238
8.10.1	Introduction	
8.10.2	Requirements	
8.10.2.1	Initiation/Cease of SLSS transmissions with ProSe Direct Discovery	
8.10.2.2	Initiation/Cease of SLSS transmissions with ProSe Direct Communication	
8.11		
	Discovery Signal Measurements under Operation with Frame Structure 3	
8.11.1	Introduction	
8.11.2	CRS based discovery signal measurements	
8.11.2.1	E-UTRAN intra-frequency measurements	
8.11.2.1.1	1	
8.11.2.1.1		
8.11.2.1.1	1.1.1 Measurement Reporting Requirements	241
8.11.2.1.1	1.2 Requirements when DRX is used	241
8.11.2.1.1	I.2.1 Measurement Reporting Requirements	242
8.11.2.2	E-UTRAN inter-frequency measurements	243
8.11.3	CSI-RS based discovery signal measurements	
8.11.3.1	E-UTRAN intra-frequency measurements	
8.11.3.1.1		
8.11.3.1.1	*	
8.11.3.1.1	1	
8.11.3.1.1 8.11.3.1.1		
	1	
8.11.3.1.1		
8.11.3.2	E-UTRAN inter-frequency measurements	
8.11.4	RSSI measurements	
8 11 4 1	F-UTRAN intra-frequency measurements	246

8.11.4.2	E-UTRAN inter-frequency measurements	246
8.12	Discovery Signal Measurements for E-UTRA Carrier Aggregation under Operation with Frame	
	Structure 3	246
8.12.1	Introduction	
8.12.2	CRS based discovery signal measurements for E-UTRA carrier aggregation	
8.12.2.1	Introduction	
8.12.2.2	Measurements of a secondary component carrier	
8.12.2.3	Measurements of a secondary component carrier with active SCell	
8.12.2.4	Measurements of a secondary component carrier with deactivated SCell	
8.12.2.4.1	√ 1	
8.12.2.4.2		
8.12.3	Requirements for CSI-RS based discovery signal measurements for E-UTRA carrier aggregation	
8.12.3.1	Introduction	
8.12.3.2	Measurements of a secondary component carrier	
8.12.3.3	Measurements of a secondary component carrier with active SCell	
8.12.3.4	Measurements of a secondary component carrier with deactivated SCell	
8.12.3.4.1		
8.12.3.4.2	E-UTRAN secondary component carrier measurements when common DRX is used	252
9 M	easurements performance requirements for UE	254
9.1	E-UTRAN measurements.	
9.1.1	Introduction	
9.1.2	Intra-frequency RSRP Accuracy Requirements	
9.1.2.1	Absolute RSRP Accuracy	
9.1.2.2	Relative Accuracy of RSRP	
9.1.2.3	Absolute RSRP Accuracy under Time Domain Measurement Resource Restriction	
9.1.2.4	Relative Accuracy of RSRP under Time Domain Measurement Resource Restriction	256
9.1.2.5	Absolute RSRP Accuracy under Time Domain Measurement Resource Restriction with CRS	
	assistance information	257
9.1.2.6	Relative Accuracy of RSRP under Time Domain Measurement Resource Restriction with CRS	
	assistance information	258
9.1.2A	Intra-frequency RSRP Accuracy Requirements in High Doppler Conditions	259
9.1.2A.1	Absolute RSRP Accuracy in high Doppler conditions	
9.1.2A.2	Relative Accuracy of RSRP in high Doppler conditions	
9.1.3	Inter-frequency RSRP Accuracy Requirements	
9.1.3.1	Absolute RSRP Accuracy	
9.1.3.2	Relative Accuracy of RSRP	
9.1.3A	Inter-frequency RSRP Accuracy Requirements in High Doppler Conditions	
9.1.3A.1	Absolute RSRP Accuracy in high Doppler conditions	
9.1.3A.2	Relative Accuracy of RSRP in high Doppler conditions	
9.1.4	RSRP Measurement Report Mapping	
9.1.5	Intra-frequency RSRQ Accuracy Requirements	
9.1.5.1	Absolute RSRQ Accuracy	
9.1.5.2	Absolute RSRQ Accuracy under Time Domain Measurement Resource Restriction	265
9.1.5.3	Absolute RSRQ Accuracy under Time Domain Measurement Resource Restriction with CRS	2
0 1 5 4	assistance information	
9.1.5.4	Absolute WB-RSRQ Accuracy	
9.1.5A	Intra-frequency RSRQ Accuracy Requirements in High Doppler Conditions	
9.1.5A.1	Absolute RSRQ Accuracy in high Doppler conditions	
9.1.6	Inter-frequency RSRQ Accuracy Requirements	
9.1.6.1	Absolute RSRQ Accuracy	
9.1.6.2	Relative Accuracy of RSRQ	
9.1.6.3	Absolute WB-RSRQ Accuracy	
9.1.6.4	Relative WB-RSRQ Accuracy	
9.1.6A	Inter-frequency RSRQ Accuracy Requirements in High Doppler Conditions	
9.1.6A.1 9.1.6A.2	Absolute RSRQ Accuracy in high Doppler conditions	
9.1.6A.2 9.1.7	Relative Accuracy of RSRQ in high Doppler conditions	
9.1. <i>7</i> 9.1.8	Power Headroom	
9.1.8 9.1.8.1	Period	
9.1.8.1	Reporting Delay	
9.1.8.2	Void	275 275

9.1.8.4	Report Mapping	
9.1.9	UE Rx – Tx time difference	
9.1.9.1	Measurement Requirement	
9.1.9.2	Measurement Report mapping	
9.1.9.3	Measurement Requirement under Time Domain Measurement Resource Restriction	277
9.1.9.4	Measurement Requirement when Time Domain Measurement Resource Restriction Pattern is	
	Configured with CRS Assistance Information	
9.1.10	Reference Signal Time Difference (RSTD)	
9.1.10.1	Intra-Frequency Accuracy Requirement	
9.1.10.2	Inter-Frequency Accuracy Requirement	
9.1.10.3	RSTD Measurement Report Mapping	
9.1.11	Carrier aggregation measurement accuracy	
9.1.11.1	Primary component carrier accuracy requirement	
9.1.11.2	Secondary component carrier accuracy requirement	
9.1.11.3	Primary and secondary component carrier relative accuracy requirement	
9.1.11.4	Secondary component carrier relative accuracy requirement	283
9.1.12	Reference Signal Time Difference (RSTD) Measurement Accuracy Requirements for Carrier	
	Aggregation	
9.1.13	Measurement accuracy for UE category 0	
9.1.13.1	Intra-frequency Absolute RSRP Accuracy for UE category 0	
9.1.13.2	Intra-frequency Relative Accuracy of RSRP for UE category 0	
9.1.13.3	Intra-frequency Absolute RSRQ Accuracy for UE category 0	
9.1.14	Accuracy requirements for Discovery Signal Measurements	
9.1.14.1	Introduction	
9.1.14.2	RSRP measurements in discovery signal occasions	
9.1.14.3	CSI-RSRP measurements in discovery signal occasions	
9.1.14.3.1	Intra-frequency CSI-RSRP measurements	
9.1.14.3.1.1	Absolute CSI-RSRP measurement requirements	
9.1.14.3.1.2	Relative CSI-RSRP measurement requirements	
9.1.14.3.2	Inter-frequency CSI-RSRP measurements	
9.1.14.3.2.1	Absolute CSI-RSRP measurement requirements	
9.1.14.3.2.2	Relative CSI-RSRP measurement requirements	
9.1.14.3.3	CSI-RSRP measurement report mapping	
9.1.14.4	RSRQ measurements in discovery signal occasions	
9.1.15	Discovery signal measurements accuracy for E-UTRAN carrier aggregation	289
9.1.15.1	Requirements for CRS based discovery signal measurements accuracy for E-UTRAN carrier	200
0 1 15 1 1	aggregation	
9.1.15.1.1	Primary component carrier accuracy requirement	
9.1.15.1.2	Secondary component carrier accuracy requirement	
9.1.15.1.3	Primary and secondary component carrier relative accuracy requirement	
9.1.15.1.4	Secondary component carrier relative accuracy requirement	
9.1.15.2	Requirements for CSI-RS based discovery signal measurements accuracy for E-UTRAN carrier	
0 1 15 2 1	aggregation	
9.1.15.2.1	Primary component carrier accuracy requirement	
9.1.15.2.2	Secondary component carrier accuracy requirement	
9.1.15.2.3	Primary and secondary component carrier relative accuracy requirement	
9.1.15.2.4	Secondary component carrier relative accuracy requirement	
9.1.16 9.1.17	Accuracy requirements for RSRQ measurement on all OFDM symbols	
9.1.17 9.1.17.1	RS-SINR Measurements	
9.1.17.1	Intra-frequency RS-SINR Measurement Accuracy Requirements	
9.1.17.2.1	Absolute RS-SINR Measurement Accuracy Requirements	
9.1.17.2.1	Inter-frequency RS-SINR Measurement Accuracy Requirements	
9.1.17.3 9.1.17.3.1	Absolute RS-SINR Measurement Accuracy Requirements	
9.1.17.3.1	Relative RS-SINR Measurement Accuracy Requirements	
9.1.17.3.2 9.1.18	Accuracy Requirements for Measurements under Operation with Frame Structure 3	
9.1.18 9.1.18.1	Introduction	
9.1.18.1	RSRP measurements	
9.1.18.2.1	RSRP measurement report mapping	
9.1.18.2.1	Inter-frequency absolute RSRP measurement accuracy requirements	
9.1.18.2.2	Inter-frequency relative RSRP measurement accuracy requirements	
9.1.18.2.3	Intra-frequency absolute RSRP measurement accuracy requirements	

9.1.18.	2.5 Intra-frequency relative RSRP measurement accuracy requirements	294
9.1.18.		
9.1.18.	Tr B	
9.1.18.		
9.1.18.		
9.1.18.		
9.1.18.		
9.1.18.	1 11 6	
9.1.18.		
9.1.18.		
9.1.18.	1 7	
9.1.18.	1 1	
9.1.18.		
9.1.18.	Transfer of the contract of th	
9.1.18. 9.1.18.		
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	290
9.1.19	Accuracy Requirements for Carrier Aggregation for Measurements under Operation with Frame Structure 3	204
9.1.19.		
9.1.19. 9.1.19.		
9.1.19. 9.1.19.		
9.1.19. 9.1.20	SFN and Subframe Time Difference (SSTD)	
9.1.20 9.1.20.	· · · · · · · · · · · · · · · · · · ·	
9.1.20.		
9.2	UTRAN FDD Measurements	
9.2.1	UTRAN FDD CPICH RSCP	
9.2.2	Void	
9.2.3	UTRAN FDD CPICH Ec/No	
9.3	UTRAN TDD Measurements	
9.3.1	UTRAN TDD P-CCPCH RSCP	
9.3.2	Void	
9.3.3	Void	
9.4	GSM Measurements	
9.4.1	GSM carrier RSSI	
9.5	CDMA2000 1x RTT Measurements	
9.5.1	CDMA2000 1x RTT Pilot Strength	
9.6	P _{CMAX,c}	
9.6.1	Report Mapping	301
9.6.2	Estimation Period.	301
9.6.3	Reporting Delay	301
9.7	IEEE802.11 Measurements	301
9.7.1	IEEE802.11 Beacon RSSI	301
9.8	MBSFN Measurements	302
9.8.1	Introduction	302
9.8.2	MBSFN RSRP	
9.8.2.1	Absolute MBSFN RSRP measurement accuracy requirements	
9.8.2.2	1 11 0	
9.8.3	MBSFN RSRQ	
9.8.3.1	Absolute MBSFN RSRQ measurement accuracy requirements	
9.8.3.2	1 11 0	
9.8.4	MCH BLER	
9.8.4.1	Measurement report mapping for MCH BLER	
9.8.4.2	Measurement report mapping for MCH Block Number	305
10	Measurements Performance Requirements for E-UTRAN	305
10.1	Received Interference Power	
10.1.1	Absolute accuracy requirement.	
10.1.2	Relative accuracy requirement	
10.1.2	Received Interference Power measurement report mapping	
10.1.5	Angle of Arrival (AOA)	
10.2.1	Range/mapping	
10.2.1	Timing Advance (Tapy)	306

10.3.1	Report mapping	306
11 Pro	oSe Requirements in Any Cell Selection state	307
11.1	Introduction	
11.2	UE Transmit Timing for ProSe in Any Cell Selection State	307
11.2.1	Introduction	
11.2.2	ProSe UE transmission timing	307
11.3	Initiation/Cease of SLSS Transmissions	
11.3.1	Introduction	308
11.3.2	Requirements	
11.4	Measurements for ProSe in Any Cell Selection State	
11.4.1	Introduction	
11.4.2	Requirements	
11.5	Selection / Reselection of ProSe Synchronization Reference	
11.5.1	Introduction	
11.5.2	Selection/Reselection to intra-frequency SyncRef UE	
11.5.2.1	Introduction	
11.5.2.2	Requirements	
11.6	Measurements Performance Requirements for ProSe in Any Cell Selection State	
11.6.1	Introduction	
11.6.2	Intra-Frequency S-RSRP Measurement Accuracy Requirements	
11.6.2.1	Absolute S-RSRP Accuracy	
11.6.2.2	Relative Accuracy of S-RSRP	310
Annex A	(normative): Test Cases	312
	rpose of annex	
	•	
	equirement classification for statistical testing	
A.2.1	Types of requirements in TS 36.133	
A.2.1.1	Time and delay requirements on UE higher layer actions	
A.2.1.2	Measurements of power levels, relative powers and time	
A.2.1.3	Implementation requirements	
A.2.1.4	Physical layer timing requirements	313
	RM test configurations	
A.3.1	Reference Measurement Channels	314
A.3.1.1	PDSCH	314
A.3.1.1.1	FDD	
A.3.1.1.2	TDD	
A.3.1.1.3	FDD for UE category 0	
A.3.1.1.4	HD-FDD for UE category 0	
A.3.1.1.5	TDD for UE category 0	
A.3.1.2	PCFICH/PDCCH/PHICH	
A.3.1.2.1	FDD	
A.3.1.2.2	TDD	
A.3.1.2.3	HD-FDD for UE category 0	
A.3.2	OFDMA Channel Noise Generator (OCNG)	
A.3.2.1	OCNG Patterns for FDD	
A.3.2.1.1	OCNG FDD pattern 1: outer resource blocks allocation in 10 MHz	
A.3.2.1.2	OCNG FDD pattern 2: full bandwidth allocation in 10 MHz	
A.3.2.1.3	OCNG FDD pattern 3: outer resource blocks allocation in 1.4 MHz	
A.3.2.1.4	OCNG FDD pattern 4: full bandwidth allocation in 1.4 MHz	324
A.3.2.1.5	OCNG FDD pattern 5: outer resource blocks allocation in 10 MHz (without MBSFN)	
A.3.2.1.6	OCNG FDD pattern 6: full bandwidth allocation in 10 MHz (without MBSFN)	
A.3.2.1.7	OCNG FDD pattern 7: full bandwidth allocation in 1.4 MHz (without MBSFN)	
A.3.2.1.8	OCNG FDD pattern 8: outer resource blocks allocation in 10 MHz for MBSFN ABS	
A.3.2.1.9	OCNG FDD pattern 9: full bandwidth allocation in 10 MHz for MBSFN ABS	327
A.3.2.1.10	1	207
A 2 2 1 11	subframe (without MBSFN)	
A.3.2.1.11		
A.3.2.1.12 A 3 2 1 13	1	
A 7 / I I '	A CACING PLAD DAILED LAS OHIER RESOURCE DIOCKS AHOCAHON IN 70 MIHA CWITHOUF MIRNENT	3 31

	dth allocation in 20 MHz (without MBSFN)	
	rce blocks allocation in 5 MHz	
	dth allocation in 5 MHz	332
	rce blocks allocation in 20 MHz with user data in every	
	rce blocks allocation in 5 MHz (without MBSFN)	
	dth allocation in 5 MHz (without MBSFN)	333
	rce blocks allocation in 5 MHz with user data in every	224
	blacks allocation in 10 MH-	
	ce blocks allocation in 10 MHz	
	th allocation in 10 MHzee blocks allocation in 1.4 MHz	
	th allocation in 1.4 MHz	
	th anocation in 1.4 MHzee blocks allocation in 10 MHz for MBSFN ABS	
	th allocation in 10 MHz for MBSFN ABSth	
	ce blocks allocation in 20 MHz	
	th allocation in 20 MHz	
	ce blocks allocation in 5 MHz	
	dth allocation in 5 MHz	
	dii anocation iii 3 Mriz	
	gurations	
	x2 antenna with PBCH	
	x2 antenna with PBCH	
	ions	
	tenna	
	tennatenna	
	on with Carrier Aggregation on Test Cases	
	ation due to Insertion Loss	
	rent Channel Bandwidth Combinations	
	ent Chainlei Bandwidth Combinations	
	dths	
	utiis	
1 0		
	ent Duplex Modes	
	Cit Dupicx Wodes	
	ent CA Configurations	
	en CA Configurations.	
	nous Dual Connectivity	
	ious Duai Connectivity	
	Se tests	
	lwidths	
	1Widdis	
	for ProSe Direct Discovery	
	for ProSe Direct Communication	
	roSe Direct Communication	
	TOSE DIrect Discovery	
	oSe Direct Communication	
	ve Traffic Generator for FDD	
· · · · · · · · · · · · · · · · · · ·	offic Generator for FDD	
A.J.1J.1 IIIIIOductioii		554

A.3.13.2	Definition	354
A.4 E-U7	TRAN RRC IDLE state	354
A.4.2	Cell Re-Selection	
A.4.2.1	E-UTRAN FDD – FDD Intra frequency case	
A.4.2.1.1	Test Purpose and Environment	
A.4.2.1.2	Test Requirements.	
A.4.2.2	E-UTRAN TDD – TDD Intra frequency case	
A.4.2.2.1	Test Purpose and Environment	
A.4.2.2.2	Test Requirements.	
A.4.2.3	E-UTRAN FDD – FDD Inter frequency case	
A.4.2.3.1	Test Purpose and Environment	
A.4.2.3.2	Test Requirements	
A.4.2.4	E-UTRAN FDD – TDD Inter frequency case	
A.4.2.4.1	Test Purpose and Environment	
A.4.2.4.2	Test Requirements.	
A.4.2.5	E-UTRAN TDD – FDD Inter frequency case	
A.4.2.5.1	Test Purpose and Environment	
A.4.2.5.2	Test Requirements.	
A.4.2.6	E-UTRAN TDD – TDD: Inter frequency case	
A.4.2.6.1	Test Purpose and Environment	
A.4.2.6.2	Test Requirements.	
A.4.2.7	E-UTRAN FDD – FDD Inter frequency case in the existence of non-allowed CSG cell	
A.4.2.7.1	Test Purpose and Environment	
A.4.2.7.2	Test Requirements	
A.4.2.8	E-UTRAN TDD – TDD Inter frequency case in the existence of non-allowed CSG cell	
A.4.2.8.1	Test Purpose and Environment	
A.4.2.8.2	Test Requirements.	
A.4.2.9	E-UTRAN FDD – FDD Intra frequency case for 5MHz bandwidth	
A.4.2.9.1	Test Purpose and Environment	
A.4.2.9.1 A.4.2.9.2	Test Requirements	
A.4.2.10	E-UTRAN FDD – FDD reselection using an increased number of carriers	
A.4.2.10.1	Test Purpose and Environment	
A.4.2.10.1 A.4.2.10.2	Test Requirements	
A.4.2.10.2 A.4.2.11	E-UTRAN TDD – TDD reselection using an increased number of carriers	
A.4.2.11 A.4.2.11.1	Test Purpose and Environment	
A.4.2.11.1 A.4.2.11.2	Test Requirements	
	UTRAN to UTRAN Cell Re-Selection	
A.4.3.1	E-UTRAN FDD – UTRAN FDD:	
A.4.3.1.1	EUTRA FDD-UTRA FDD cell reselection: UTRA FDD is of higher priority	
A.4.3.1.1 A.4.3.1.1.1	Test Purpose and Environment	
A.4.3.1.1.1 A.4.3.1.1.2	Test Requirements	
A.4.3.1.1.2 A.4.3.1.2	EUTRA FDD-UTRA FDD cell reselection: UTRA FDD is of lower priority	
A.4.3.1.2.1	Test Purpose and Environment	
A.4.3.1.2.1 A.4.3.1.2.2	Test Requirements	
A.4.3.1.2.2 A.4.3.1.3	•	362
A.4.3.1.3	EUTRA FDD-UTRA FDD cell reselection in fading propagation conditions: UTRA FDD is of	292
A.4.3.1.3.1	lower priority	
	Test Pagairements	
A.4.3.1.3.2 A.4.3.1.4	Test Requirements EUTRA FDD-UTRA FDD cell reselection: UTRA FDD is of lower priority for 5MHz	360
A.4.3.1.4	_ · · · · · · · · · · · · · · · · · · ·	204
A 4 2 1 4 1	bandwidth	
A.4.3.1.4.1 A.4.3.1.4.2	Test Purpose and Environment	
A.4.3.1.4.2 A.4.3.1.5	Test Requirements	
A.4.3.1.5 A.4.3.1.5.1	Idle mode FDD to UTRA FDD interRAT reselection	
	Test Pagairements	
A.4.3.1.5.2	Test Requirements	
A.4.3.2	E-UTRAN FDD – UTRAN TDD:	
A.4.3.2.1	Test Purpose and Environment	
A.4.3.2.1.1	Void	
A.4.3.2.1.2	1.28Mcps TDD option	
A.4.3.2.1.3 A 4 3 2 2	Void Test Requirements	393 393
M.4.1.7.7.	LENI INCUMPENDENIS	191

A.4.3.2.2.1	1.28Mcps TDD option	393
A.4.3.2A	E-UTRA FDD to UTRA TDD cell re-selection for IncMon	393
A.4.3.2A.1	Test Purpose and Environment	393
A.4.3.2A.2	Test Requirements	397
A.4.3.3	E-UTRAN TDD – UTRAN FDD:	397
A.4.3.3.1	Test Purpose and Environment	397
A.4.3.3.2	Test Requirements	400
A.4.3.3A	Idle mode TDD to UTRA FDD interRAT reselection	400
A.4.3.3A.1	Test Purpose and Environment	400
A.4.3.3A.2	Test Requirements	
A.4.3.4	E-UTRAN TDD – UTRAN TDD:	405
A.4.3.4.1	E-UTRA to UTRA TDD cell re-selection: UTRA is of higher priority	405
A.4.3.4.1.1	Test Purpose and Environment	
A.4.3.4.1.2	Test Requirements	407
A.4.3.4.2	E-UTRA to UTRA TDD cell re-selection: UTRA is of lower priority	407
A.4.3.4.2.1	Test Purpose and Environment	
A.4.3.4.2.2	Test Requirements	409
A.4.3.4.3	EUTRA TDD-UTRA TDD cell reselection in fading propagation conditions: UTRA TDD is of	
	lower priority	410
A.4.3.4.3.1	Test Purpose and Environment	
A.4.3.4.3.2	Test Requirements	
A.4.3.4.4	E-UTRA TDD to UTRA TDD cell re-selection for IncMon	
A.4.3.4.4.1	Test Purpose and Environment	412
A.4.3.4.4.2	Test Requirements	416
A.4.4 E-	-UTRAN to GSM Cell Re-Selection	416
A.4.4.1	E-UTRAN FDD – GSM:	
A.4.4.1.1	Test Purpose and Environment	
A.4.4.1.2	Test Requirements	
A.4.4.2	E-UTRAN TDD – GSM:	418
A.4.4.2.1	Test Purpose and Environment	418
A.4.4.2.2	Test Requirements	
A.4.5 E-	-UTRAN to HRPD Cell Re-Selection	421
A.4.5.1	E-UTRAN FDD – HRPD	421
A.4.5.1.1	E-UTRAN FDD – HRPD Cell Reselection: HRPD is of Lower Priority	421
A.4.5.1.1.1	Test Purpose and Environment	421
A.4.5.1.1.2	Test Requirements	423
A.4.5.2	E-UTRAN TDD – HRPD	423
A.4.5.2.1	E-UTRAN TDD – HRPD Cell Reselection: HRPD is of Lower Priority	423
A.4.5.2.1.1	Test Purpose and Environment	423
A.4.5.2.1.2	Test Requirements	426
A.4.6	E-UTRAN to cdma2000 1X Cell Re-Selection	426
A.4.6.1	E-UTRAN FDD – cdma2000 1X	426
A.4.6.1.1	E-UTRAN FDD - cdma2000 1X Cell Reselection: cdma2000 1X is of Lower Priority	426
A.4.6.1.1.1	Test Purpose and Environment	426
A.4.6.1.1.2	Test Requirements	429
A.4.6.2	E-UTRAN TDD – cdma2000 1X	429
A.4.6.2.1	E-UTRAN TDD -cdma2000 1X Cell Reselection: cdma2000 1X is of Lower Priority	429
A.4.6.2.1.1	Test Purpose and Environment	429
A.4.6.2.1.2	Test Requirements	432
A.5 E-UT	TDANIDDC CONNECTED Mode Mobility	122
	FRAN RRC CONNECTED Mode Mobility	
A.5.1 E- A.5.1.1	UTRAN HandoverE-UTRAN FDD - FDD Intra frequency handover	
A.5.1.1 A.5.1.1.1	• •	
A.5.1.1.1 A.5.1.1.2	Test Purpose and Environment	
A.5.1.1.2 A.5.1.2	Test Requirements	
A.5.1.2 A.5.1.2.1	E-UTRAN TDD - TDD Intra frequency handover	
A.5.1.2.1 A.5.1.2.2	Test Paguirements	
A.5.1.2.2 A.5.1.3	Test Requirements E-UTRAN FDD – FDD Inter frequency handover	
A.5.1.3 A.5.1.3.1	Test Purpose and Environment	
A.5.1.3.1 A.5.1.3.2	Test Requirements.	
A.5.1.5.2 A 5 1 4	F-UTRAN TDD – TDD Inter frequency handover	430 438

A.5.1.4.1	Test Purpose and Environment	438
A.5.1.4.2	Test Requirements	
A.5.1.5	E-UTRAN FDD – FDD Inter frequency handover: unknown target cell	
A.5.1.5.1	Test Purpose and Environment	
A.5.1.5.2	Test Requirements	
A.5.1.6 A.5.1.6.1	E-UTRAN TDD – TDD Inter frequency handover; unknown Target Cell	
	Test Purpose and Environment	
A.5.1.6.2 A.5.1.7	E-UTRAN FDD – TDD Inter frequency handover	
A.5.1.7 A.5.1.7.1	Test Purpose and Environment	
A.5.1.7.2	Test Requirements	
A.5.1.8	E-UTRAN TDD – FDD Inter frequency handover	
A.5.1.8.1	Test Purpose and Environment	
A.5.1.8.2	Test Requirements	
A.5.1.9	E-UTRAN FDD - FDD Intra frequency handover for 5MHz bandwidth	
A.5.1.9.1	Test Purpose and Environment	
A.5.1.9.2	Test Requirements	
A.5.1.10	E-UTRAN FDD - FDD Intra frequency handover for UE category 0	
A.5.1.10.1	Test Purpose and Environment	
A.5.1.10.2	Test Requirements	
A.5.1.11	E-UTRAN HD - FDD Intra frequency handover for UE category 0	
A.5.1.11.1	Test Purpose and Environment	
A.5.1.11.2	Test Requirements	
A.5.1.12	E-UTRAN TDD - TDD Intra frequency handover for UE category 0	
A.5.1.12.1	Test Purpose and Environment	
A.5.1.12.2	Test Requirements.	
A.5.2 E A.5.2.1	UTRAN Handover to other RATsE-UTRAN FDD – UTRAN FDD Handover	
A.5.2.1 A.5.2.1.1		
A.5.2.1.1 A.5.2.1.2	Test Purpose and Environment	
A.5.2.1.2 A.5.2.2	E-UTRAN TDD - UTRAN FDD Handover	
A.5.2.2.1	Test Purpose and Environment	
A.5.2.2.2	Test Requirements	
	TRAN FDD- GSM Handover	
A.5.2.3.1	Test Purpose and Environment	
A.5.2.3.2	Test Requirements	
A.5.2.4	E-UTRAN TDD - UTRAN TDD Handover	
A.5.2.4.1	Test Purpose and Environment	465
A.5.2.4.1.1	Void	
A.5.2.4.1.2	1.28 Mcps TDD option	465
A.5.2.4.1.3	Void	
A.5.2.4.2	Test Requirements	
A.5.2.4.2.1	Void	
A.5.2.4.2.2	1.28 Mcps TDD option	
A.5.2.4.2.3	Void	
A.5.2.5	E-UTRAN FDD – UTRAN TDD Handover	
A.5.2.5.1 A.5.2.5.1.3	Test Purpose and Environment	
A.5.2.5.1.5 A.5.2.5.2	Test Requirements	
A.5.2.5.2 A.5.2.5.2.1	Void	
A.5.2.5.2.1 A.5.2.5.2.2	1.28 Mcps TDD option	
A.5.2.5.2.3	Void	
A.5.2.6	E-UTRAN TDD - GSM Handover	
A.5.2.6.1	Test Purpose and Environment	
A.5.2.6.2	Test Requirements	
A.5.2.7	E-UTRAN FDD – UTRAN FDD Handover; Unknown Target Cell	
A.5.2.7.1	Test Purpose and Environment	474
A.5.2.7.2	Test Requirements	
A.5.2.8	E-UTRAN FDD - GSM Handover; Unknown Target Cell	
A.5.2.8.1	Test Purpose and Environment	
A.5.2.8.2	Test Requirements	
A.5.2.9	E-UTRAN TDD - GSM Handover; Unknown Target Cell	478

A.5.2.9.1	Test Purpose and Environment	
A.5.2.9.2	Test Requirements	
A.5.2.10	E-UTRAN TDD to UTRAN TDD handover: unknown target cell	
A.5.2.10.1	Test Purpose and Environment	
A.5.2.10.2	Test Requirements	
A.5.2.10A	E-UTRAN FDD – UTRAN FDD Multicarrier Handover with two target cells	
A.5.2.10A.1	Test Purpose and Environment	
A.5.2.10A.2	Test Requirements	
A.5.2.10B	E-UTRAN TDD – UTRAN FDD Multicarrier Handover with two target cells	
A.5.2.10B.1	Test Purpose and Environment	
A.5.2.10B.2	Test Requirements	
A.5.2.11	E-UTRAN FDD – UTRAN FDD Handover for 5MHz Bandwidth	488
A.5.2.11.1	Test Purpose and Environment	
A.5.2.11.2	Test Requirements	
A.5.3	E-UTRAN Handover to Non-3GPP RATs	489
A.5.3.1	E-UTRAN FDD – HRPD Handover	
A.5.3.1.1	Test Purpose and Environment	
A.5.3.1.2	Test Requirements	492
A.5.3.2	E-UTRAN FDD – cdma2000 1X Handover	
A.5.3.2.1	Test Purpose and Environment	492
A.5.3.2.2	Test Requirements	
A.5.3.3	E-UTRAN FDD – HRPD Handover; Unknown Target Cell	495
A.5.3.3.1	Test Purpose and Environment	495
A.5.3.3.2	Test Requirements	497
A.5.3.4	E-UTRAN FDD – cdma2000 1X Handover; Unknown Target cell	498
A.5.3.4.1	Test Purpose and Environment	498
A.5.3.4.2	Test Requirements	499
A.5.3.5	E-UTRAN TDD – HRPD Handover	500
A.5.3.5.1	Test Purpose and Environment	500
A.5.3.5.2	Test Requirements	
A.5.3.6	E-UTRAN TDD – cdma2000 1X Handover	503
A.5.3.6.1	Test Purpose and Environment	503
A.5.3.6.2	Test Requirements.	506
A.6 RRC	Connection Control	506
	RC Re-establishment	
A.6.1.1	E-UTRAN FDD Intra-frequency RRC Re-establishment	
A.6.1.1.1	Test Purpose and Environment	
A.6.1.1.2	Test Requirements	
A.6.1.2	E-UTRAN FDD Inter-frequency RRC Re-establishment	
A.6.1.2.1	Test Purpose and Environment	
A.6.1.2.2	Test Requirements	
A.6.1.3	E-UTRAN TDD Intra-frequency RRC Re-establishment	
A.6.1.3.1	Test Purpose and Environment	
A.6.1.3.2	Test Requirements	
A.6.1.4	E-UTRAN TDD Inter-frequency RRC Re-establishment	
A.6.1.4.1	Test Purpose and Environment	
A.6.1.4.2	Test Requirements	
A.6.1.5	E-UTRAN FDD Intra-frequency RRC Re-establishment for 5MHz bandwidth	
A.6.1.5.1	Test Purpose and Environment	
A.6.1.5.2	Test Requirements	
A.6.1.6	E-UTRAN FD-FDD Intra-frequency RRC Re-establishment for UE category 0	
A.6.1.6.1	Test Purpose and Environment	
A.6.1.6.2	Test Requirements	
A.6.1.7	E-UTRAN HD-FDD Intra-frequency RRC Re-establishment for UE category 0	
A.6.1.7.1	Test Purpose and Environment	
A.6.1.7.2	Test Requirements	
A.6.1.8	E-UTRAN TDD Intra-frequency RRC Re-establishment for UE category 0	
A.6.1.8.1	Test Purpose and Environment	
A.6.1.8.2	Test Requirements	
	andom Access	
A.6.2.1	E-LITRAN FDD – Contention Based Random Access Test	

A.6.2.1.1	Test Purpose and Environment	
A.6.2.1.2	Test Requirements	
A.6.2.1.2.1	Random Access Response Reception	
A.6.2.1.2.2	No Random Access Response Reception	
A.6.2.1.2.3	Receiving a NACK on msg3	
A.6.2.1.2.4	Reception of an Incorrect Message over Temporary C-RNTI	
A.6.2.1.2.5	Reception of a Correct Message over Temporary C-RNTI	
A.6.2.1.2.6	Contention Resolution Timer expiry	524
A.6.2.2	E-UTRAN FDD – Non-Contention Based Random Access Test	
A.6.2.2.1	Test Purpose and Environment	
A.6.2.2.2	Test Requirements	
A.6.2.2.2.1	Random Access Response Reception	
A.6.2.2.2.2	No Random Access Response Reception	
A.6.2.3	E-UTRAN TDD – Contention Based Random Access Test	
A.6.2.3.1	Test Purpose and Environment	
A.6.2.3.2	Test Requirements	
A.6.2.3.2.1	Random Access Response Reception	
A.6.2.3.2.2	No Random Access Response reception	
A.6.2.3.2.3	Receiving a NACK on msg3	
A.6.2.3.2.4	Reception of an Incorrect Message over Temporary C-RNTI	
A.6.2.3.2.5	Reception of a Correct Message over Temporary C-RNTI	
A.6.2.3.2.6	Contention Resolution Timer expiry	
A.6.2.4 A.6.2.4.1	E-UTRAN TDD – Non-Contention Based Random Access Test. Test Purpose and Environment	
A.6.2.4.1 A.6.2.4.2	Test Purpose and Environment Test Requirements	
A.6.2.4.2.1	Random Access Response Reception	
A.6.2.4.2.1 A.6.2.4.2.2	No Random Access Response Reception	
A.6.2.5	E-UTRAN FDD – Contention Based Random Access Test for 5MHz bandwidth	
A.6.2.5.1	Test Purpose and Environment	
A.6.2.5.1 A.6.2.5.2	Test Requirements	
A.6.2.6	E-UTRAN FDD – Non-contention Based Random Access Test for 5MHz bandwidth	
A.6.2.6.1	Test Purpose and Environment	
A.6.2.6.2	Test Requirements.	
A.6.2.7	E-UTRAN FDD – Non-Contention Based Random Access Test For SCell.	
A.6.2.7.1	Test Purpose and Environment	
A.6.2.7.2	Test Requirements.	
A.6.2.7.2.1	Random Access Response Reception	
A.6.2.7.2.2	No Random Access Response Reception	
A.6.2.7.2.3	Stop Preamble transmission if maximum number of preamble transmission counter has been	
	reached	535
A.6.2.8	E-UTRAN TDD – Non-Contention Based Random Access Test For SCell	
A.6.2.8.1	Test Purpose and Environment	536
A.6.2.8.2	Test Requirements	
A.6.2.8.2.1	Random Access Response Reception	538
A.6.2.8.2.2	No Random Access Response Reception	538
A.6.2.8.2.3	Stop Preamble transmission if maximum number of preamble transmission counter has been	
	reached	
A.6.3 RI	RC Connection Release with Redirection	
A.6.3.1	Redirection from E-UTRAN FDD to UTRAN FDD	
A.6.3.1.1	Test Purpose and Environment	
A.6.3.1.2	Test Requirements	
A.6.3.2	Redirection from E-UTRAN TDD to UTRAN FDD.	
A.6.3.2.1	Test Purpose and Environment	
A.6.3.2.2	Test Requirements	
A.6.3.3	Redirection from E-UTRAN FDD to GERAN when System Information is provided	
A.6.3.3.1	Test Purpose and Environment	
A.6.3.3.2	Test Requirements	
A.6.3.4	Redirection from E-UTRAN TDD to GERAN when System Information is provided	
A.6.3.4.1	Test Purpose and Environment	
A.6.3.4.2	Test Requirements.	
A.6.3.5	E-UTRA TDD RRC connection release redirection to UTRA TDD	
A.6.3.5.1	Test Purpose and Environment	548

A.6.3.5.2	Test Requirements	550
A.6.3.6	E-UTRA FDD RRC connection release redirection to UTRA TDD	
A.6.3.6.1	Test Purpose and Environment	550
A. 6.3.6.2	Test Requirements	552
A.6.3.7	E-UTRA TDD RRC connection release redirection to UTRA TDD without SI provided	552
A.6.3.7.1	Test Purpose and Environment	552
A.6.3.7.2	Test Requirements	555
A.6.3.8	E-UTRA FDD RRC connection release redirection to UTRA TDD without SI provided	555
A.6.3.8.1	Test Purpose and Environment	555
A.6.3.8.2	Test Requirements	558
A.6.3.9	Redirection from E-UTRAN FDD to UTRAN FDD without System Information	558
A.6.3.9.1	Test Purpose and Environment	
A.6.3.9.2	Test Requirements	
A.6.3.10	Redirection from E-UTRAN FDD to GERAN when System Information is not provided	
A.6.3.10.1	Test Purpose and Environment	
A.6.3.10.2	Test Requirements	
A.6.3.11	Redirection from E-UTRAN TDD to GERAN when System Information is not provided	
A.6.3.11.1	Test Purpose and Environment	
A.6.3.11.2	Test Requirements	
A.6.3.12	E-UTRAN TDD RRC connection release redirection to UTRAN FDD without SI provided	
A.6.3.12.1	Test Purpose and Environment	
A.6.3.12.2	Test Requirements	
	•	
	ng and Signalling Characteristics	
	E Transmit Timing	
A.7.1.1	E-UTRAN FDD – UE Transmit Timing Accuracy Tests	
A.7.1.1.1	Test Purpose and Environment	568
A.7.1.1.2	Test Requirements	
A.7.1.2	E-UTRAN TDD - UE Transmit Timing Accuracy Tests	570
A.7.1.2.1	Test Purpose and Environment	570
A.7.1.2.2	Test Requirements	
A.7.1.3	E-UTRAN FDD – UE Transmit Timing Accuracy Tests for SCell	573
A.7.1.3.1	Test Purpose and Environment	
A.7.1.3.2	Test Requirements	
A.7.1.4	E-UTRAN TDD - UE Transmit Timing Accuracy Tests for SCell	576
A.7.1.4.1	Test Purpose and Environment	576
A.7.1.4.2	Test Requirements	
A.7.1.4A	E-UTRAN TDD - UE Transmit Timing Accuracy Tests for SCell for 20 MHz + 10 MHz	579
A.7.1.4A.1	Test Purpose and Environment	579
A.7.1.4A.2	Test Requirements	579
A.7.1.5	E-UTRAN FDD – UE Transmit Timing Accuracy Tests for 5MHz Bandwidth	579
A.7.1.5.1	Test Purpose and Environment	579
A.7.1.5.2	Test Requirements	580
A.7.1.6	E-UTRAN FDD – UE Transmit Timing Accuracy Tests for SCell in sTAG	580
A.7.1.6.1	Test Purpose and Environment	580
A.7.1.6.2	Test Requirements	582
A.7.1.7	E-UTRAN TDD - UE Transmit Timing Accuracy Tests for SCell in sTAG	583
A.7.1.7.1	Test Purpose and Environment	583
A.7.1.7.2	Test Requirements	584
A.7.1.7A	E-UTRAN TDD - UE Transmit Timing Accuracy Tests for SCell in sTAG for 20MHz +20MHz	585
A.7.1.7A.1	Test Purpose and Environment	585
A.7.1.7A.2	Test Requirements	585
A.7.1.7B	E-UTRAN TDD - UE Transmit Timing Accuracy Tests for SCell in sTAG for 20MHz +10MHz	
A.7.1.7B.1	Test Purpose and Environment	
A.7.1.7B.2	Test Requirements	
A.7.1.8	Void	
A.7.1.8.1	Void	586
A.7.1.8.2	Void	
A.7.1.9	Void	
A.7.1.8.1	Void	
A.7.1.8.2	Void	586
	E Timing Advance	586

A.7.2.1	E-UTRAN FDD – UE Timing Advance Adjustment Accuracy Test	586
A.7.2.1.1	Test Purpose and Environment	586
A.7.2.1.2	Test Requirements	
A.7.2.2	E-UTRAN TDD – UE Timing Advance Adjustment Accuracy Test	
A.7.2.2.1	Test Purpose and Environment	
A.7.2.2.2	Test Requirements	
A.7.2.3	E-UTRAN FDD – UE Timing Advance Adjustment Accuracy Test for 5MHz	
A.7.2.3.1	Test Purpose and Environment	
A.7.2.3.2	Test Requirements	
A.7.2.4	E-UTRAN FDD – UE Timing Advance Adjustment Accuracy Test for SCell in sTAG	
A.7.2.4.1	Test Purpose and Environment	
A.7.2.4.2	Test Requirements	
A.7.2.5	E-UTRAN TDD – UE Timing Advance Adjustment Accuracy Test for Scell in sTAG	
A.7.2.5.1	Test Purpose and Environment	
A.7.2.5.2	Test Requirements	595
A.7.2.5A	E-UTRAN TDD – UE Timing Advance Adjustment Accuracy Test for Scell in sTAG for 20 MHz	
	+20 MHz	
A.7.2.5A.1	Test Purpose and Environment	
A.7.2.5A.2	Test Requirements	596
A.7.2.5B	E-UTRAN TDD – UE Timing Advance Adjustment Accuracy Test for Scell in sTAG for 20 MHz	
	+10 MHz	
A.7.2.5B.1	Test Purpose and Environment	
A.7.2.5B.2	Test Requirements	
	adio Link Monitoring	
A.7.3.1	E-UTRAN FDD Radio Link Monitoring Test for Out-of-sync	
A.7.3.1.1	Test Purpose and Environment	
A.7.3.1.2	Test Requirements	
A.7.3.2	E-UTRAN FDD Radio Link Monitoring Test for In-sync	
A.7.3.2.1	Test Purpose and Environment	
A.7.3.2.2	Test Requirements	
A.7.3.3	E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync	
A.7.3.3.1	Test Purpose and Environment	
A.7.3.3.2	Test Requirements	
A.7.3.4	E-UTRAN TDD Radio Link Monitoring Test for In-sync	
A.7.3.4.1	Test Purpose and Environment	
A.7.3.4.2	Test Requirements	
A.7.3.5	E-UTRAN FDD Radio Link Monitoring Test for Out-of-sync in DRX	
A.7.3.5.1	Test Purpose and Environment	
A.7.3.5.2	Test Requirements	
A.7.3.6	E-UTRAN FDD Radio Link Monitoring Test for In-sync in DRX	
A.7.3.6.1	Test Purpose and Environment	
A.7.3.6.2	Test Requirements	
A.7.3.7	E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync in DRX	
A.7.3.7.1	Test Purpose and Environment	
A.7.3.7.2	Test Requirements	
A.7.3.8	E-UTRAN TDD Radio Link Monitoring Test for In-sync in DRX	
A.7.3.8.1	Test Purpose and Environment	
A.7.3.8.2	Test Requirements	
A.7.3.9 E-U	TRAN FDD Radio Link Monitoring Test for Out-of-sync under Time Domain Measurement Resource	
	Restriction and Non-MBSFN ABS	
A.7.3.9.2	Test Requirements	628
A.7.3.10	E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync under Time Domain Measurement	
. =	Resource Restriction with Non-MBSFN ABS	
A.7.3.10.1	Test Purpose and Environment	
A.7.3.11	E-UTRAN FDD Radio Link Monitoring Test for In-sync for Non-MBSFN ABS	
A.7.3.11.1	Test Purpose and Environment	
A.7.3.11.2	Test Requirements.	
A.7.3.12	E-UTRAN TDD Radio Link Monitoring Test for In-sync for Non-MBSFN ABS	
A.7.3.12.1	Test Purpose and Environment	
A.7.3.12.2	Test Requirements.	639
A.1.3.13 E-U	JTRAN FDD Radio Link Monitoring Test for Out-of-sync under Time Domain Measurement	(20
	Resource Restriction with MBSFN ABS	039

A.7.3.13.1	Test Purpose and Environment	639
A.7.3.13.2	Test Requirements	642
A.7.3.14 E-U	JTRAN TDD Radio Link Monitoring Test for Out-of-sync under Time Domain Measurement	
	Resource Restriction with MBSFN ABS	
A.7.3.14.1	Test Purpose and Environment	
A.7.3.14.2	Test Requirements	645
A.7.3.15	E-UTRAN FDD Radio Link Monitoring Test for In-sync under Time Domain Measurement	c 4.5
A 7 2 15 1	Resource Restriction with MBSFN ABS	
A.7.3.15.1	Test Purpose and Environment	
A.7.3.15.2	Test Requirements.	648
A.7.3.16	E-UTRAN TDD Radio Link Monitoring Test for In-sync under Time Domain Measurement Resource Restriction with MBSFN ABS	610
A.7.3.16.1	Test Purpose and Environment	
A.7.3.16.1 A.7.3.16.2	Test Requirements	
A.7.3.10.2 A.7.3.17	E-UTRAN FDD Radio Link Monitoring Test for Out-of-sync under Time Domain Measurement	052
A.7.3.17	Resource Restriction with CRS Assistance Information and Non-MBSFN ABS	652
A.7.3.17.1	Test Purpose and Environment	
A.7.3.17.2	Test Requirements.	
A.7.3.18	E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync under Time Domain Measurement	
	Resource Restriction with CRS Assistance Information and Non-MBSFN ABS	655
A.7.3.18.1	Test Purpose and Environment	
A.7.3.18.2	Test Requirements	
A.7.3.19	E-UTRAN FDD Radio Link Monitoring Test for In-sync under Time Domain Measurement	
	Resouce Restriction with CRS assistance information and Non-MBSFN ABS	658
A.7.3.19.1	Test Purpose and Environment	658
A.7.3.19.2	Test Requirements	662
A.7.3.20	E-UTRAN TDD Radio Link Monitoring Test for In-sync under Time Domain Measurement	
	Resouce Restriction with CRS assistance information and Non-MBSFN ABS	
A.7.3.20.1	Test Purpose and Environment	662
A.7.3.20.2	Test Requirements	666
A.7.3.21	E-UTRAN FDD Radio Link Monitoring Test for In-sync under Time Domain Measurement	
	Resouce Restriction with CRS assistance information and MBSFN ABS	
A.7.3.21.1	Test Purpose and Environment	
A.7.3.21.2	Test Requirements	670
A.7.3.22	E-UTRAN TDD Radio Link Monitoring Test for In-sync under Time Domain Measurement	67 0
A 7 2 22 1	Resouce Restriction with CRS assistance information and MBSFN ABS	
A.7.3.22.1	Test Purpose and Environment	
A.7.3.22.2	Test Requirements E-UTRAN FDD Radio Link Monitoring Test for Out-of-sync for 5MHz Bandwidth	
A.7.3.23 A.7.3.23.1	Test Purpose and Environment	
A.7.3.23.1 A.7.3.23.2	Test Requirements	
A.7.3.24	E-UTRAN FDD Radio Link Monitoring Test for In-sync for 5MHz Bandwidth	
A.7.3.24 A.7.3.24.1	Test Purpose and Environment	
A.7.3.24.2	Test Requirements.	
A.7.3.25	E-UTRAN FDD Radio Link Monitoring Test for In-sync in DRX for 5MHz Bandwidth	
A.7.3.25.1	Test Purpose and Environment	
A.7.3.25.2	Test Requirements	
A.7.3.26	E-UTRAN FD-FDD Radio Link Monitoring Test for Out-of-sync for UE Category 0	
A.7.3.26.1	Test Purpose and Environment	
A.7.3.26.2	Test Requirements	
A.7.3.27	E-UTRAN FD-FDD Radio Link Monitoring Test for In-sync for UE Category 0	680
A.7.3.27.1	Test Purpose and Environment	680
A.7.3.27.2	Test Requirements	
A.7.3.28	E-UTRAN FD-FDD Radio Link Monitoring Test for Out-of-sync in DRX for UE category 0	
A.7.3.28.1	Test Purpose and Environment	
A.7.3.28.2	Test Requirements	
7.3.29	E-UTRAN FD-FDD Radio Link Monitoring Test for In-sync in DRX for UE Category 0	
7.3.29.1	Test Purpose and Environment	
7.3.29.2	Test Requirements.	
A.7.3.30	E-UTRAN HD-FDD Radio Link Monitoring Test for Out-of-sync for UE Category 0	
A.7.3.30.1	Test Purpose and Environment	
A.7.3.30.2	Test Requirements	097

A.7.3.31	E-UTRAN HD-FDD Radio Link Monitoring Test for In-sync for UE Category 0	
A.7.3.31.	1 Test Purpose and Environment	692
A.7.3.31.	2 Test Requirements	695
A.7.3.32	E-UTRAN HD-FDD Radio Link Monitoring Test for Out-of-sync in DRX for UE category 0	695
A.7.3.32.	1 Test Purpose and Environment	695
A.7.3.32.	2 Test Requirements	698
A.7.3.33	E-UTRAN HD-FDD Radio Link Monitoring Test for In-sync in DRX for UE Category 0	698
A.7.3.33.	1 Test Purpose and Environment	698
A.7.3.33.		
A.7.3.34	E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync for UE Category 0	701
A.7.3.34.	1 Test Purpose and Environment	701
A.7.3.34.	1	
A.7.3.35	E-UTRAN TDD Radio Link Monitoring Test for In-sync for UE category 0	704
A.7.3.35.	1 Test Purpose and Environment	704
A.7.3.35.	1	
A.7.3.36	E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync in DRX for UE category 0	707
A.7.3.36.	1	
A.7.3.36.	1	
A.7.3.37	E-UTRAN TDD Radio Link Monitoring Test for In-sync in DRX for UE category 0	
A.7.3.37.	1	
A.7.3.37.	2 Test Requirements	713
A.7.3.38	E-UTRAN FDD-FDD DC Radio Link Monitoring Test for Out-of-sync in DRX in synchronous DC.	713
A.7.3.38.	1 Test Purpose and Environment	713
A.7.3.38.	1 · · · · · · · · · · · · · · · · · · ·	716
A.7.3.39	E-UTRAN FDD-FDD DC Radio Link Monitoring Test for Out-of-sync in DRX in asynchronous	
	DC	716
A.7.3.39.	1	
A.7.3.39.	1	
A.7.3.40	E-UTRAN TDD-TDD DC Radio Link Monitoring Test for Out-of-sync in DRX in synchronous DC.	
A.7.3.40.	1 Test Purpose and Environment	720
A.7.3.40.	1	722
A.7.3.41	E-UTRAN FDD-FDD Radio Link Monitoring Test for In-sync in DRX in synchronous dual	
	connectivity	
A.7.3.41.	1	
A.7.3.41.		
A.7.3.42	E-UTRAN FDD-FDD DC Radio Link Monitoring Test for In-sync in DRX in asynchronous DC	
A.7.3.42.	1	
A.7.3.42.		729
A.7.3.43	E-UTRAN TDD-TDD Radio Link Monitoring Test for In-sync in DRX in synchronous dual	
	connectivity	
A.7.3.43.	ı	
A.7.3.43.	1	
A.7.4	Interruption for Dual Connectivity	733
A.7.4.1	E-UTRAN FDD-FDD DC interruption at transitions between active and non-active during DRX in	
	synchronous DC	
A.7.4.1.1	Test Purpose and Environment	
A.7.4.1.2	Test Requirements	735
A.7.4.2	E-UTRAN TDD-TDD DC interruption at transitions between active and non-active during DRX in	
	synchronous DC	
A.7.4.2.1	Test Purpose and Environment	
A.7.4.2.2	Test Requirements	737
A.7.4.3	E-UTRAN FDD-FDD Interruption at transitions between active and non-active during DRX in	
	asynchronous dual connectivity	
A.7.4.3.1	Test Purpose and Environment	
A.7.4.3.2	Test Requirements	
A.7.5	Proximity-based Services	
A.7.5.1	E-UTRAN FDD – UE ProSe Direct Discovery Transmission Timing Accuracy Test	
A.7.5.1.1	Test Purpose and Environment	
A.7.5.1.2	Test Requirements	
A.7.5.2	E-UTRAN TDD – UE ProSe Direct Discovery Transmission Timing Accuracy Test	
A.7.5.2.1	Test Purpose and Environment	741 742
A / 1 I 7	Lest Recultrements	14

A.7.5.3	E-UTRAN FDD - Interruptions due to ProSe Direct Discovery	742
A.7.5.3.1	Test Purpose and Environment	742
A.7.5.3.2	Test Requirements	744
A.7.5.4	E-UTRAN FDD – UE ProSe Direct Communication Transmission Timing Accuracy Test	745
A.7.5.4.1	Test Purpose and Environment	
A.7.5.4.2	Test Requirements	
A.7.5.5	E-UTRAN FDD - Interruptions due to ProSe Direct Communication	
A.7.5.5.1	Test Purpose and Environment	
A.7.5.5.2	Test Requirements.	
AO III	•	
	Measurements Procedures.	
	E-UTRAN FDD Intra-frequency Measurements	
A.8.1.1	E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions	
40111	in asynchronous cells	
A.8.1.1.1	Test Purpose and Environment	
A.8.1.1.2	Test Requirements	
A.8.1.2	E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions	
	in synchronous cells	
A.8.1.2.1	Test Purpose and Environment	
A.8.1.2.2	Test Requirements	
A.8.1.3	E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions	
	in synchronous cells with DRX	
A.8.1.3.1	Test Purpose and Environment	
A.8.1.3.2	Test Requirements	755
A.8.1.4	Void	755
A.8.1.5	E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using	
	autonomous gaps	755
A.8.1.5.1	Test Purpose and Environment	755
A.8.1.5.2	Test Requirements	757
A.8.1.6	E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using	
	autonomous gaps with DRX	757
A.8.1.6.1	Test Purpose and Environment	
A.8.1.6.2	Test Requirements	
A.8.1.7	E-UTRAN FDD-FDD Intra-Frequency Event-Triggered Reporting under Time Domain	
	Measurement Resource Restriction with Non-MBSFN ABS	760
A.8.1.7.1	Test Purpose and Environment	
A.8.1.7.2	Test Requirements.	
A.8.1.8	E-UTRAN FDD-FDD Intra-Frequency Event-Triggered Reporting under Time Domain	, 02
11.0.1.0	Measurement Resource Restriction with CRS Assistance Information and Non-MBSFN ABS	763
A.8.1.8.1	Test Purpose and Environment	
A.8.1.8.2	Test Requirements	
A.8.1.9	E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions	
Λ.υ.1.)	in asynchronous cells for 5MHz bandwidth	
A.8.1.9.1	Test Purpose and Environment	
A.8.1.9.1 A.8.1.9.2	•	
	Test Requirements.	/ 00
A.8.1.10	E-UTRAN FDD-FDD Intra-Frequency Event Triggered Reporting under Fading Propagation	700
A O 1 1O 1	Conditions in Synchronous Cells with DRX for 5 MHz Bandwidth	
A.8.1.10.1	Test Purpose and Environment	
A.8.1.10.2	Test Requirements.	
A.8.1.11	E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions	
	in asynchronous cells for UE category 0	
A.8.1.11.1	Test Purpose and Environment	
A.8.1.11.2	Test Requirements	
A.8.1.12	E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions	
	in synchronous cells for UE category 0	
A.8.1.12.1	Test Purpose and Environment	
A.8.1.12.2	Test Requirements	
A.8.1.13	E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions	
	in synchronous cells with DRX for UE category 0	772
A.8.1.13.1	Test Purpose and Environment	772
A 8 1 13 2	Test Requirements	774

A.8.1.14	E-UTRAN HD-FDD intra-frequency event triggered reporting under fading propagation conditions	
	in asynchronous cells for UE category 0	774
A.8.1.14.1	Test Purpose and Environment	
A.8.1.14.2	Test Requirements	776
A.8.1.15	E-UTRAN HD-FDD intra-frequency event triggered reporting under fading propagation conditions	
	in synchronous cells for UE category 0	
A.8.1.15.1	Test Purpose and Environment	777
A.8.1.15.2	Test Requirements	778
A.8.1.16	E-UTRAN HD-FDD intra-frequency event triggered reporting under fading propagation conditions	
	in synchronous cells with DRX for UE category 0	779
A.8.1.16.1	Test Purpose and Environment	779
A.8.1.16.2	Test Requirements	781
A.8.1.17	E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation	
	conditions in synchronous cells	781
A.8.1.17.1	Test Purpose and Environment	781
A.8.1.17.2	Test Requirements	
A.8.1.18	E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation	
	conditions in synchronous cells with DRX	784
A.8.1.18.1	Test Purpose and Environment	
A.8.1.18.2	Test Requirements	
A.8.1.19	E-UTRAN FD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using	
	autonomous gaps for UE category 0	786
A.8.1.19.1	Test Purpose and Environment	
A.8.1.19.2	Test Requirements	
A.8.1.20	E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using	, 00
11.0.1.20	autonomous gaps with DRX for UE category 0	780
A.8.1.20.1	Test Purpose and Environment	
A.8.1.20.2	Test Requirements	
A.8.1.21	E-UTRAN HD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using	, , ,
A.0.1.21	autonomous gaps for UE category 0	791
A.8.1.21.1	Test Purpose and Environment	
A.8.1.21.2	Test Requirements	
A.8.1.22	E-UTRAN HD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using	1) .
A.6.1.22	autonomous gaps with DRX for UE category 0	70/
A.8.1.22.1	Test Purpose and Environment	
A.8.1.22.2	Test Requirements	
	-UTRAN TDD Intra-frequency Measurements	
A.8.2.1	E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation	/)(
A.0.2.1	conditions in synchronous cells	704
A.8.2.1.1	·	
A.8.2.1.1 A.8.2.1.2	Test Purpose and Environment	
	E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation	190
A.8.2.2		700
A.8.2.2.1	conditions in synchronous cells with DRX	
	Test Purpose and Environment	
A.8.2.2.2	Test Requirements.	801
A.8.2.3	E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using	001
A 0 2 2 1	autonomous gaps	
A.8.2.3.1	Test Purpose and Environment	
A.8.2.3.2	Test Requirements.	803
A.8.2.4	E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using	0.0
	autonomous gaps with DRX	
A.8.2.4.1	Test Purpose and Environment	
A.8.2.4.2	Test Requirements.	806
A.8.2.5	E-UTRAN TDD-TDD Intra-Frequency Event-Triggered Reporting under Time Domain	
	Measurement Resource Restriction with Non-MBSFN ABS	
A.8.2.5.1	Test Purpose and Environment	
A.8.2.5.2	Test Requirements	808
A.8.2.6	E-UTRAN TDD-TDD Intra-Frequency Event-Triggered Reporting under Time Domain	
	Measurement Resource Restriction with CRS Assistance Information and Non-MBSFN ABS	
A.8.2.6.1	Test Purpose and Environment	
A.8.2.6.2	Test Requirements	811

A.8.2.7	E-UTRAN TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous	
	gaps	
A.8.2.7.1	Test Purpose and Environment	
A.8.2.7.2	Test Requirements	813
A.8.2.8	E-UTRAN TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous	
	gaps with DRX	
A.8.2.8.1	Test Purpose and Environment	
A.8.2.8.2	Test Requirements	
A.8.3	E-UTRAN FDD - FDD Inter-frequency Measurements	816
A.8.3.1	E-UTRAN FDD-FDD Inter-frequency event triggered reporting under fading propagation	016
. 0 2 1 1	conditions in asynchronous cells	
A.8.3.1.1	Test Purpose and Environment	
A.8.3.1.2	Test Requirements	818
A.8.3.2	E-UTRAN FDD-FDD Inter-frequency event triggered reporting when DRX is used under fading	010
. 0 2 2 1	propagation conditions in asynchronous cells	
A.8.3.2.1	Test Purpose and Environment	
A.8.3.2.2	Test Requirements.	821
A.8.3.3	E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation	001
. 0 2 2 1	conditions in asynchronous cells with DRX when L3 filtering is used	
A.8.3.3.1	Test Purpose and Environment	
A.8.3.3.2	Test Requirements	824
A.8.3.4	E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using	024
10211	autonomous gaps	
A.8.3.4.1	Test Purpose and Environment	
A.8.3.4.2	Test Requirements	826
A.8.3.5	E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using	026
10252	autonomous gaps with DRX	
A.8.3.5.2	Test Requirements.	828
A.8.3.6	E-UTRAN FDD-FDD Inter-frequency event triggered reporting without measurement gaps under	020
10261	AWGN propagation conditions in asynchronous cells	
A.8.3.6.1	Test Purpose and Environment	
A.8.3.6.2	Test Requirements.	830
A.8.3.7	E-UTRAN FDD-FDD Inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells for Increased Carrier Monitoring without Reduced Performance	
	· · · · · · · · · · · · · · · · · · ·	021
A.8.3.7.1	Group Test Purpose and Environment	
A.8.3.7.1 A.8.3.7.2	Test Requirements	
A.8.3.8	FDD-FDD Interfrequency correct reporting of measurement events with reduced performance group	
A.o.3.o		
A.8.3.8.1	configured, non DRX	
A.8.3.8.2	Test Purpose and Environment	
	Test Requirements	637
A.8.3.9	group configured, DRX	927
A.8.3.9.1	Test Purpose and Environment	
A.8.3.9.1 A.8.3.9.2		
A.8.4	Test Requirements E-UTRAN TDD - TDD Inter-frequency Measurements	
A.8.4.1	E-UTRAN TDD-TDD Inter-frequency weastrements E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation	041
A.0.4.1	conditions in synchronous cells	Q/I1
A.8.4.1.1	Test Purpose and Environment	
A.8.4.1.2	Test Requirements.	
A.8.4.2	E-UTRAN TDD-TDD Inter-frequency event triggered reporting when DRX is used under fading	042
A.0.4.2	propagation conditions in synchronous cells	8/13
A.8.4.2.1	Test Purpose and Environment	
A.8.4.2.2	Test Requirements.	
A.8.4.3	E-UTRAN TDD-TDD inter-frequency event triggered reporting under AWGN propagation	043
11.0.4.3	conditions in synchronous cells with DRX when L3 filtering is used	2/15
A.8.4.3.1	Test Purpose and Environment	
A.8.4.3.1 A.8.4.3.2	Test Requirements	
A.8.4.4	E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using	0+/
11.0.4.4	autonomous gaps	Q// Q
A.8.4.4.1	Test Purpose and Environment	
A.8.4.4.1 A.8.4.4.2	Test Requirements	
4 1. U. T. T. Z	1 Co. 100quii ciii ciii ciii ciii ciii ciii ciii	050

A.8.4.5	E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using	
	autonomous gaps with DRX	
A.8.4.5.1	Test Purpose and Environment	
A.8.4.5.2	Test Requirements.	
A.8.4.6	E-UTRAN TDD-TDD Inter-frequency event triggered reporting for TDD UL/DL configuration 0	
A.8.4.6.1	Test Purpose and Environment	
A.8.4.6.2	Test Requirements	.854
A.8.4.7	E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation	
	conditions in synchronous cells for Increased Carrier Monitoring without Reduced Performance	054
. 0 . 7 . 1	Group	
A.8.4.7.1	Test Purpose and Environment	
A.8.4.7.2	Test Requirements.	.858
A.8.4.8	TDD-TDD Interfrequency correct reporting of measurement events with reduced performance group	050
A.8.4.8.1	configured, non DRX	
A.8.4.8.2	Test Purpose and Environment	
A.8.4.9	TDD-TDD Inter-frequency correct reporting of measurement events with reduced performance	.001
A.0.4.3	group configured, DRX	861
A.8.4.9.1	Test Purpose and Environment	
A.8.4.9.2	Test Requirements.	
A.8.5	E-UTRAN FDD - UTRAN FDD Measurements	
A.8.5.1	E-UTRAN FDD - UTRAN FDD event triggered reporting under fading propagation conditions	
A.8.5.1.1	Test Purpose and Environment	
A.8.5.1.2	Test Requirements	
A.8.5.2	E-UTRAN FDD - UTRAN FDD SON ANR cell search reporting under AWGN propagation	.007
11.0.5.2	conditions	.868
A.8.5.2.1	Test Purpose and Environment	
A.8.5.2.2	Test Requirements	
A.8.5.3	E-UTRAN FDD-UTRAN FDD event triggered reporting when DRX is used under fading	
	propagation conditions	.870
A.8.5.3.1	Test Purpose and Environment	
A.8.5.3.2	Test Requirements	
A.8.5.4	E-UTRAN FDD - UTRAN FDD enhanced cell identification under AWGN propagation conditions	
A.8.5.4.1	Test Purpose and Environment	873
A.8.5.4.2	Test Requirements	876
A.8.5.5	E- UTRAN FDD - UTRAN FDD identification of a new CGI of UTRAN cell using autonomous	
	gaps	
A.8.5.5.1	Test Purpose and Environment	
A.8.5.5.2	Test Requirements	.878
A.8.5.6	E-UTRAN FDD - UTRAN FDD event triggered reporting without measurement gaps under AWGN	
	propagation conditions	
A.8.5.6.1	Test Purpose and Environment	
A.8.5.6.2	Test Requirements	.879
A.8.5.7	E-UTRAN FDD - UTRAN FDD Event Triggered Reporting under Fading Propagation Conditions	
	for 5 MHz Bandwidth	
A.8.5.7.1	Test Purpose and Environment	
A.8.5.7.2	Test Requirements.	.880
A.8.5.8	E-UTRA FDD InterRAT UTRA FDD correct reporting of measurement events with reduced	000
A 0 5 0 1	performance group configured, non DRX	
A.8.5.8.1	Test Purpose and Environment	
A.8.5.8.2	Test Requirements	
A.8.6	E-UTRAN TDD - UTRAN FDD Measurements	
A.8.6.1	E-UTRAN TDD - UTRAN FDD event triggered reporting under fading propagation conditions	
A.8.6.1.1	Test Paguirements	
A.8.6.1.2	Test Requirements.	.003
A.8.6.2	E- UTRAN TDD - UTRAN FDD identification of a new CGI of UTRAN cell using autonomous	00/
A 9 6 2 1	gaps	
A.8.6.2.1 A.8.6.2.2	Test Paguirements	
A.8.6.3	Test Requirements E-UTRA TDD InterRAT UTRA FDD correct reporting of measurement events with reduced	.000
A.0.0.3	performance group configured, non DRX	999
A.8.6.3.1	Test Purpose and Environment	
13.0.0.3.1	10st 1 tipose and Environment	.000

A.8.6.3.2 Test Requirements	
A.8.7 E-UTRAN TDD – UTRAN TDD Measurements	
A.8.7.1 E-UTRAN TDD to UTRAN TDD cell search under fading propagation conditions	
A.8.7.1.1 Test Purpose and Environment	891
A.8.7.1.1.1 Void	
A.8.7.1.1.2 1.28 Mcps TDD option	
A.8.7.1.1.3 Void	
A.8.7.1.2 Test Requirements	
A.8.7.1.2.1 Void	
A.8.7.1.2.2 1.28 Mcps TDD option	
A.8.7.1.2.3 Void	
A.8.7.2 E-UTRAN TDD-UTRAN TDD cell search when DRX is used under fading propagation condition	
A.8.7.2.1 Test Purpose and Environment	
A.8.7.2.2 Test Requirements	
A.8.7.3 E-UTRAN TDD - UTRAN TDD SON ANR cell search reporting in AWGN propagation condition A.8.7.3.1 Test Purpose and Environment	
A.8.7.3.2 Test Purpose and Environment Test Purpose and Environment Test Purpose and Environment	
A.8.7.3.3 Test Requirements	
A.8.7.4 E-UTRAN TDD - UTRAN TDD enhanced cell identification under AWGN propagation condition	
A.8.7.4.1 Test Purpose and Environment	
A.8.7.4.2 Test Requirements	
A.8.7.5 E-UTRA TDD InterRAT UTRA TDD correct reporting of measurement events with reduced	>02
performance group configured, non DRX	902
A.8.7.5.1 Test Purpose and Environment	
A.8.7.5.2 Test Requirements	
A.8.7A TBD	
A.8.7A.1 E-UTRA FDD InterRAT UTRA TDD correct reporting of measurement events with reduced	
performance group configured, non DRX	904
A.8.7A.1.1 Test Purpose and Environment	
A.8.7A.1.2 Test Requirements	
A.8.8 E-UTRAN FDD – GSM Measurements	
A.8.8.1 E-UTRAN FDD – GSM event triggered reporting in AWGN	
A.8.8.1.1 Test Purpose and Environment	
A.8.8.1.2 Test Requirements	
A.8.8.2 E-UTRAN FDD-GSM event triggered reporting when DRX is used in AWGN	
A.8.8.2.1 Test Purpose and Environment	
A.8.8.2.2 Test Requirements	
86 1 1 8	
A.8.8.3.1 Test Purpose and Environment	
A.8.9 E-UTRAN FDD - UTRAN TDD measurements	
A.8.9.1 E-UTRAN FDD - UTRAN TDD event triggered reporting in fading propagation conditions	
A.8.9.1.1 Test Purpose and Environment	
A.8.9.1.2 Test Requirements	
A.8.9.2 E-UTRAN FDD - UTRAN TDD enhanced cell identification under AWGN propagation condition	
A.8.9.2.1 Test Purpose and Environment	
A.8.9.2.2 Test Requirements	
A.8.10 E-UTRAN TDD – GSM Measurements	
A.8.10.1 E-UTRAN TDD – GSM event triggered reporting in AWGN	
A.8.10.1.1 Test Purpose and Environment	918
A.8.10.1.2 Test Requirements	919
A.8.10.2 E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN	
A.8.10.2.1 Test Purpose and Environment	
A.8.10.2.2 Test Requirements	
A.8.11 Monitoring of Multiple Layers	
A.8.11.1 Multiple E-UTRAN FDD-FDD Inter-frequency event triggered reporting under fading propagation	
conditions	
A.8.11.1.1 Test Purpose and Environment	
A.8.11.1.2 Test Requirements	
A.8.11.2 E-UTRAN TDD – E-UTRAN TDD and E-UTRAN TDD Inter-frequency event triggered reporting	
under fading propagation conditions	
A.8.11.2.1 Test Purpose and Environment	923

A.8.11.2.2	Test Requirements	926
A.8.11.3	E-UTRAN FDD-FDD Inter-frequency and UTRAN FDD event triggered reporting under fading	
	propagation conditions	927
A.8.11.3.1	Test Purpose and Environment	927
A.8.11.3.2	Test Requirements	
A.8.11.4	InterRAT E-UTRA TDD to E-UTRA TDD and UTRA TDD cell search test case	929
A.8.11.4.1	Test Purpose and Environment	929
A.8.11.4.2	Test Requirements	932
A.8.11.5	Combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM	
	cell in static propagation conditions	932
A.8.11.5.1	Test Purpose and Environment	932
A.8.11.5.2	Test Requirements	
A.8.11.6	Combined E-UTRAN TDD – E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM	
	cell in static propagation conditions	935
A.8.11.6.1	Test Purpose and Environment	
A.8.11.6.2	Test Requirements	
A.8.12 RS	STD Intra-frequency Measurements	
A.8.12.1	E-UTRAN FDD intra-frequency RSTD measurement reporting delay test case	
A.8.12.1.1	Test Purpose and Environment	
A.8.12.1.2	Test Requirements	
A.8.12.2	E-UTRAN TDD intra-frequency RSTD measurement reporting delay test case	
A.8.12.2.1	Test Purpose and Environment	
A.8.12.2.2	Test Requirements	
	STD Inter-frequency Measurements	
A.8.13.1	E-UTRAN FDD-FDD inter-frequency RSTD measurement reporting delay test case with the) 40
A.0.13.1	reference cell on the serving carrier frequency	0/16
A.8.13.1.1	Test Purpose and Environment	
A.8.13.1.1 A.8.13.1.2	Test Requirements	
A.8.13.1.2 A.8.13.2	E-UTRAN TDD-TDD inter-frequency RSTD measurement reporting delay test case with the	7 4 7
A.0.13.2	reference cell on the serving carrier frequency	050
A.8.13.2.1	Test Purpose and Environment	
A.8.13.2.1 A.8.13.2.2	•	
	Test Requirements	
	UTRAN TDD - FDD Inter-frequency Measurements	934
A.8.14.1	E-UTRAN TDD-FDD Inter-frequency event triggered reporting under fading propagation	054
. 0 1 4 1 1	conditions in asynchronous cells	
A.8.14.1.1	Test Purpose and Environment	
A.8.14.1.2	Test Requirements	956
A.8.14.2	E-UTRAN TDD-FDD Inter-frequency event triggered reporting when DRX is used under fading	056
. 0 1 4 2 1	propagation conditions in asynchronous cells	
A.8.14.2.1	Test Purpose and Environment	
A.8.14.2.2	Test Requirements	959
A.8.14.3	E-UTRAN TDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using	
	autonomous gaps	
A.8.14.3.1	Test Purpose and Environment	
A.8.14.3.2	Test Requirements	
	UTRAN FDD - TDD Inter-frequency Measurements	962
A.8.15.1	E-UTRAN FDD-TDD Inter-frequency event triggered reporting under fading propagation	
	conditions in asynchronous cells	
A.8.15.1.1	Test Purpose and Environment	
A.8.15.1.2	Test Requirements	963
A.8.15.2	E-UTRAN FDD-TDD Inter-frequency event triggered reporting when DRX is used under fading	
	propagation conditions in asynchronous cells	963
A.8.15.2.1	Test Purpose and Environment	963
A.8.15.2.2	Test Requirements	966
A.8.15.3	E-UTRAN FDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using	
	autonomous gaps	966
A.8.15.3.1	Test Purpose and Environment	
A.8.15.3.2	Test Requirements	
	UTRAN Carrier Aggregation Measurements	
A.8.16.1	E-UTRAN FDD event triggered reporting under deactivated SCell in non-DRX	
A.8.16.1.1	Test Purpose and Environment	
A.8.16.1.2	Test Requirements	
	▲	

A.8.16.2	E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX	972
A.8.16.2.1	Test Purpose and Environment	972
A.8.16.2.2	Test Requirements	
A.8.16.3	E-UTRAN FDD-FDD Event triggered reporting on deactivated SCell with PCell interruption in	
	non-DRX	
A.8.16.3.1	Test Purpose and Environment	
A.8.16.3.2	Test Requirements	976
A.8.16.4	E-UTRAN TDD-TDD Event triggered reporting on deactivated SCell with PCell interruption in	
	non-DRX	
A.8.16.4.1	Test Purpose and Environment	
A.8.16.4.2	Test Requirements	978
A.8.16.5	E-UTRAN FDD event triggered reporting under deactivated SCell in non-DRX for 20 MHz	
	bandwidth	
A.8.16.5.1	Test Purpose and Environment	
A.8.16.5.2	Test Requirements	979
A.8.16.6	E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX for 20 MHz	
	bandwidth	
A.8.16.6.1	Test Purpose and Environment	
A.8.16.6.2	Test Requirements	980
A.8.16.7	E-UTRA FDD event triggered reporting on deactivated SCell with PCell interruption in non-DRX	000
101671	for 20 MHz bandwidth	
A.8.16.7.1	Test Purpose and Environment	
A.8.16.7.2	Test Requirements	981
A.8.16.8	E-UTRA TDD event triggered reporting on deactivated SCell with PCell interruption in non-DRX	0.01
	for 20 MHz bandwidth	
A.8.16.8.1	Test Purpose and Environment	
A.8.16.8.2	Test Requirements	
A.8.16.9	E-UTRAN FDD event triggered reporting under deactivated SCell in non-DRX for 10MHz+5MHz	
A.8.16.9.1	Test Purpose and Environment	
A.8.16.9.2	Test Requirements.	
A.8.16.10	E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX for 10MHz+5MHz	
A.8.16.10.1	Test Purpose and Environment	
A.8.16.10.2	Test Requirements.	
A.8.16.11	E-UTRAN FDD event triggered reporting on deactivating SCell with PCell interruption in non-DRX	
A Q 1 C 1 1 1	for 10MHz+5MHz	
A.8.16.11.1 A.8.16.11.2	Test Purpose and Environment	
	E-UTRAN TDD event triggered reporting on deactivating SCell with PCell interruption in non-	983
A.8.16.12	DRX for 10MHz+5MHz	005
A.8.16.12.1	Test Purpose and Environment	
A.8.16.12.1	Test Requirements.	
A.8.16.13	E-UTRAN FDD event triggered reporting under deactivated SCell in non-DRX for 5MHz +5 MHz	90.
A.6.10.13	bandwidth	086
A.8.16.13.1	Test Purpose and Environment	
A.8.16.13.1	Test Parpose and Environment Test Requirements.	
A.8.16.14	E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX for 5 MHz +5 MHz	960
A.0.10.14	bandwidth	086
A.8.16.14.1	Test Purpose and Environment	
A.8.16.14.2	Test Parpose and Environment Test Requirements	
A.8.16.15	E-UTRA FDD event triggered reporting on deactivated SCell with PCell interruption in non-DRX	901
A.0.10.13	for 5 +5 MHz bandwidth	987
A.8.16.15.1	Test Purpose and Environment	
A.8.16.7.2	Test Requirements	
A.8.16.16	E-UTRA TDD event triggered reporting on deactivated SCell with PCell interruption in non-DRX	
0.10.10	for 5+5 MHz bandwidth	988
A.8.16.16.1	Test Purpose and Environment	
A.8.16.16.2	Test Requirements	
A.8.16.17	E-UTRAN FDD activation and deactivation of known SCell in non-DRX	
A.8.16.17.1	Test Purpose and Environment	
A.8.16.17.2	Test Requirements	
A.8.16.17A	E-UTRAN FDD activation and deactivation of known SCell in non-DRX for 20MHz	
Δ 8 16 17Δ		991

A.8.16.17A.2	1	
	E-UTRAN FDD activation and deactivation of known SCell in non-DRX for 10MHz + 5MHz	
A.8.16.17B.1	Test Purpose and Environment	
A.8.16.17B.2	Test Requirements	
A.8.16.17C	E-UTRAN FDD activation and deactivation of known SCell in non-DRX for 5MHz + 5MHz	
A.8.16.17C.1	Test Purpose and Environment	
A.8.16.17C.2	Test Requirements	
A.8.16.18	E-UTRAN TDD activation and deactivation of known SCell in non-DRX	
A.8.16.18.1	Test Purpose and Environment	
A.8.16.18.2	Test Requirements	
	E-UTRAN TDD activation and deactivation of known SCell in non-DRX for 20MHz	
A.8.16.18A.1	Test Purpose and Environment	
A.8.16.18A.2	1	
	E-UTRAN TDD activation and deactivation of known SCell in non-DRX for 10MHz + 5MHz	
A.8.16.18B.1	Test Purpose and Environment	
A.8.16.18B.2	Test Requirements	
	E-UTRAN TDD activation and deactivation of known SCell in non-DRX for 5MHz + 5MHz	
A.8.16.18C.1	Test Purpose and Environment	
A.8.16.18C.2	Test Requirements	
A.8.16.18D	E-UTRAN TDD activation and deactivation of known SCell in non-DRX for 20MHz + 10MHz	
A.8.16.18D.1	Test Purpose and Environment	
A.8.16.18D.2	1	
A.8.16.19	E-UTRAN FDD activation and deactivation of unknown SCell in non-DRX	
A.8.16.19.1	Test Purpose and Environment	
A.8.16.19.2	Test Requirements	
	E-UTRAN FDD activation and deactivation of unknown SCell in non-DRX for 20MHz	
A.8.16.19A.1	Test Purpose and Environment	
A.8.16.19A.2	· · · · · · · · · · · · · · · · · · ·	
A.8.16.19B	$E-UTRAN\ FDD\ activation\ and\ deactivation\ of\ unknown\ SCell\ in\ non-DRX\ for\ 10MHz+5MHz\$	
A.8.16.19B.1	Test Purpose and Environment	
A.8.16.19B.2	Test Requirements	
	$E-UTRAN\ FDD\ activation\ and\ deactivation\ of\ unknown\ SCell\ in\ non-DRX\ for\ 5MHz+5MHz\$	
A.8.16.19C.1	Test Purpose and Environment	
A.8.16.19C.2	Test Requirements	
A.8.16.20	E-UTRAN TDD activation and deactivation of unknown SCell in non-DRX	
A.8.16.20.1	Test Purpose and Environment	
A.8.16.20.2	Test Requirements	
	E-UTRAN TDD activation and deactivation of unknown SCell in non-DRX for 20MHz	
A.8.16.20A.1	Test Purpose and Environment	
A.8.16.20A.2	Test Requirements	
A.8.16.20B	E-UTRAN TDD activation and deactivation of unknown SCell in non-DRX for 10MHz + 5MHz	
A.8.16.20B.1	Test Purpose and Environment	
A.8.16.20B.2	Test Requirements	
	E-UTRAN TDD activation and deactivation of unknown SCell in non-DRX for 5MHz + 5MHz	
A.8.16.20C.1	Test Purpose and Environment	
A.8.16.20C.2	Test Requirements	
	E-UTRAN TDD activation and deactivation of unknown SCell in non-DRX for 20MHz + 10MHz	
A.8.16.20D.1	Test Purpose and Environment	
A.8.16.20D.2	1	
A.8.16.21	E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX for 20MHz+10MHz	
A.8.16.21.1	Test Purpose and Environment	
A.8.16.21.2	Test Requirements.	1007
A.8.16.22	E-UTRAN TDD event triggered reporting on deactivating SCell with PCell interruption in non-	4005
. 0 1 6 22 1	DRX for 20MHz+10MHz	
A.8.16.22.1	Test Purpose and Environment	
A.8.16.22.2	Test Requirements	1008
A.8.16.23	E-UTRAN TDD-FDD CA Event Triggered Reporting Under Deactivated SCell in Non-DRX with	1000
. 0 1 - 22 -	PCell in FDD	
A.8.16.23.1	Test Purpose and Environment	
A.8.16.23.2	Test Requirements	1011
A.8.16.24	E-UTRAN TDD-FDD CA Event Triggered Reporting Under Deactivated SCell in Non-DRX with	1011
	PCell in TDD	1111

A.8.16.24.1	Test Purpose and Environment	
A.8.16.24.2	Test Requirements	.1014
A.8.16.25	E-UTRAN TDD-FDD CA Event triggered reporting on deactivated SCell with PCell interruption in	
	non-DRX with PCell in FDD	
A.8.16.25.1	Test Purpose and Environment	
A.8.16.25.2	Test Requirements	.1016
A.8.16.26	E-UTRAN TDD-FDD CA Event triggered reporting on deactivated SCell with PCell interruption in	
	non-DRX with PCell in TDD	.1016
A.8.16.26.1	Test Purpose and Environment	.1016
A.8.16.26.2	Test Requirements	
8.16.27	3 DL PCell in FDD CA Event Triggered Reporting with 2 Deactivated SCells in Non-DRX	.1019
A.8.16.27.1	Test Purpose and Environment	.1019
A.8.16.27.2	Test Requirements	.1023
A.8.16.28	3 DL PCell in TDD CA Event Triggered Reporting with 2 Deactivated SCells in Non-DRX	.1023
A.8.16.28.1	Test Purpose and Environment	.1023
A.8.16.28.2	Test Requirements	.1027
A.8.16.29	3 DL FDD CA Event Triggered Reporting under Deactivated SCells in Non-DRX	.1027
A.8.16.29.1	Test Purpose and Environment	
A.8.16.29.2	Test Requirements	
A.8.16.30	3 DL TDD CA Event Triggered Reporting under Deactivated SCells in Non-DRX	
A.8.16.30.1	Test Purpose and Environment	
A.8.16.30.2	Test Requirements	
A.8.16.31	E-UTRAN TDD-FDD 3 DL CA Event Triggered Reporting on Deactivated SCell with PCell and	
	SCell Interruptions in Non-DRX and with PCell in FDD.	.1035
A.8.16.31.1	Test Purpose and Environment	
A.8.16.31.2	Test Requirements	
A.8.16.32	E-UTRAN TDD-FDD 3 DL CA Event Triggered Reporting on Deactivated SCell with PCell and	
	SCell Interruptions in Non-DRX and with PCell in TDD	.1039
A.8.16.32.1	Test Purpose and Environment	
A.8.16.32.2	Test Requirements	
A.8.16.33	E-UTRAN FDD 3 DL CA Event Triggered Reporting on Deactivated SCell with PCell and SCell	
	Interruptions in Non-DRX	.1043
A.8.16.33.1	Test Purpose and Environment	
A.8.16.33.2	Test Requirements	
A.8.16.34	E-UTRAN TDD 3 DL CA Event Triggered Reporting on Deactivated SCell with PCell and SCell	
	Interruptions in Non-DRX	.1047
A.8.16.34.1	Test Purpose and Environment	
A.8.16.34.2	Test Requirements	
A.8.16.35	3 DL PCell in FDD CA Activation and Deactivation of Known SCell in Non-DRX	
A.8.16.35.1	Test Purpose and Environment	
A.8.16.35.2	Test Requirements	
A.8.16.36	3 DL PCell in TDD CA Activation and Deactivation of Known SCell in Non-DRX	
A.8.16.36.1	Test Purpose and Environment	
A.8.16.36.2	Test Requirements	
A.8.16.37	3 DL FDD CA activation and deactivation of known SCell in non-DRX	
A.8.16.37.1	Test Purpose and Environment	
A.8.16.37.2	Test Requirements	
A.8.16.38	3 DL TDD CA activation and deactivation of known SCell in non-DRX	
A.8.16.38.1	Test Purpose and Environment	
A.8.16.38.2	Test Requirements	
A.8.16.39	E-UTRA TDD-FDD 3DL CA Activation and Deactivation of Unknown SCell in Non-DRX with	.1002
A.0.10.37	PCell in FDD	1063
A.8.16.39.1	Test Purpose and Environment	
A.8.16.39.2	Test Requirements	
A.8.16.40	E-UTRA TDD-FDD 3DL CA Activation and Deactivation of Unknown SCell in Non-DRX with	.1000
71.0.10. 4 0	PCell in TDD	1066
A.8.16.40.1	Test Purpose and Environment	
A.8.16.40.1 A.8.16.40.2	Test Requirements	
A.8.16.41	3 DL FDD CA activation and deactivation of unknown SCell in non-DRX	
A.8.16.41.1	Test Purpose and Environment	
A.8.16.41.1	Test Requirements	
Α.δ.10.41.2	3 DL TDD CA activation and deactivation of unknown SCell in non-DRX	.1072 1072

A.8.16.42.1	Test Purpose and Environment	
A.8.16.42.2	Test Requirements	1075
A.8.17 RS	TD Measurements for E-UTRAN Carrier Aggregation	1075
A.8.17.1	E-UTRAN FDD RSTD measurement reporting delay test case	1075
A.8.17.1.1	Test Purpose and Environment	1075
A.8.17.1.2	Test Requirements	1080
A.8.17.2	E-UTRAN TDD RSTD measurement reporting delay test case	1080
A.8.17.2.1	Test Purpose and Environment	
A.8.17.2.2	Test Requirements	
A.8.17.3	E-UTRAN FDD RSTD Measurement Reporting Test Case for 20 MHz	1086
A.8.17.3.1	Test Purpose and Environment	1086
A.8.17.3.2	Test Requirements	
A.8.17.4	E-UTRAN TDD RSTD Measurement Reporting Test Case for 20 MHz	1087
A.8.17.4.1	Test Purpose and Environment	1087
A.8.17.4.2	Test Requirements	
A.8.17.5	E-UTRAN FDD RSTD Measurement Reporting Test Case for 10MHz+5MHz	1088
A.8.17.5.1	Test Purpose and Environment	1088
A.8.17.5.2	Test Requirements	1089
A.8.17.6	E-UTRAN TDD RSTD Measurement Reporting Test Case for 10MHz+5MHz	1089
A.8.17.6.1	Test Purpose and Environment	1089
A.8.17.6.2	Test Requirements	
A.8.17.7	E-UTRAN FDD RSTD Measurement Reporting Test Case for 5 + 5 MHz Bandwidth	1090
A.8.17.7.1	Test Purpose and Environment	1090
A.8.17.7.2	Test Requirements	
A.8.17.8	E-UTRAN TDD RSTD Measurement Reporting Test Case for 5+5 MHz bandwidth	
A.8.17.8.1	Test Purpose and Environment	
A.8.17.8.2	Test Requirements	
A.8.17.9	E-UTRAN TDD RSTD Measurement Reporting Test Case for 20MHz+10MHz	
A.8.17.9.1	Test Purpose and Environment	
A.8.17.9.2	Test Requirements	
A.8.17.10	E-UTRAN 3 DL FDD CA RSTD Measurement Reporting Delay Test Case	
A.8.17.10.1	Test Purpose and Environment	
A.8.17.10.2	Test Requirements	
A.8.17.11	E-UTRAN 3 DL TDD CA RSTD Measurement Reporting Delay Test Case	
A.8.17.11.1	Test Purpose and Environment	
A.8.17.11.2	Test Requirements	
A.8.18 E-	UTRAN TDD – HRPD Measurements	
A.8.18.1	E-UTRAN TDD-HRPD event triggered reporting under fading propagation conditions	
A.8.18.1.1	Test Purpose and Environment	
A.8.18.1.2	Test Requirements	
A.8.19 E-	UTRAN TDD – CDMA2000 1X Measurements	
A.8.19.1	E-UTRAN TDD – CDMA2000 1X event triggered reporting under fading propagation conditions.	
A.8.19.1.1	Test Purpose and Environment	
A.8.19.1.2	Test Requirements	
	er-frequency/RAT Measurements in CA mode	
A.8.20.1	E-UTRAN FDD-FDD Inter-frequency event triggered reporting under fading propagation	
	conditions in asynchronous cells	1113
A.8.20.1.1	Test Purpose and Environment	
A.8.20.1.2	Test Requirements	
A.8.20.2	E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation	
	conditions in synchronous cells	1115
A.8.20.2.1	Test Purpose and Environment	
A.8.20.2.2	Test Requirements	
A.8.20.2A	E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation	
	conditions in synchronous cells for 20 MHz +20 MHz bandwidth	1117
A.8.20.2A.1	Test Purpose and Environment	
A.8.20.2A.2	Test Requirements	
A.8.20.2B	E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation	
o.20.22	conditions in synchronous cells for 20 MHz +10 MHz bandwidth	1117
A.8.20.2B.1	Test Purpose and Environment	
A.8.20.2B.2	Test Requirements	
A.8.20.3	E-UTRAN FDD - UTRAN FDD event triggered reporting under fading propagation conditions	

A.8.20.3.1	Test Purpose and Environment	1118
A.8.20.3.2	Test Requirements	1121
A.8.20.4	E-UTRAN TDD to UTRAN TDD cell search under fading propagation conditions	1121
A.8.20.4.1	Test Purpose and Environment	
A.8.20.4.1.1	1.28 Mcps TDD option	
A.8.20.4.2	Test Requirements	
A.8.20.4.2.1	1.28 Mcps TDD option	
A.8.20.4A	E-UTRAN TDD with 20 MHz +20 MHz bandwidth to UTRAN TDD cell search under fading	
	propagation conditions	1124
A.8.20.4A.1	Test Purpose and Environment	
A.8.20.4A.1.	•	
A.8.20.4A.2	Test Requirements	
A.8.20.4A.2.	•	
A.8.20.4B	E-UTRAN TDD with 20 MHz +10 MHz bandwidth to UTRAN TDD cell search under fading	1121
71.0.20. ID	propagation conditions	1125
A.8.20.4B.1	Test Purpose and Environment	
A.8.20.4B.1.	<u>*</u>	
A.8.20.4B.1	Test Requirements	
A.8.20.4B.2.		
	SG Proximity Indication Testing Case for E-UTRAN FDD – FDD Inter frequency	
A.8.21.1	Test Purpose and Environment	
A.8.21.2	Test Requirements	
	UTRAN Discovery Signal Measurements	
A.8.22.1	E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation condition	
	in synchronous cells in DRX based on CRS based discovery signal	
A.8.22.1.1	Test Purpose and Environment	
A.8.22.1.2	Test Requirements	1132
A.8.22.2	E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation	
	conditions in synchronous cells in DRX based on CRS based discovery signal	
A.8.22.2.1	Test Purpose and Environment	
A.8.22.2.2	Test Requirements	
A.8.22.3	E-UTRAN FDD-FDD inter-frequency event triggered reporting under fading propagation condition	
	in DRX based on CRS based discovery signal	
A.8.22.3.1	Test Purpose and Environment	
A.8.22.3.2	Test Requirements	1138
A.8.22.4	E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation	
	conditions in DRX based on CRS based discovery signal	1138
A.8.22.4.1	Test Purpose and Environment	1138
A.8.22.4.2	Test Requirements	1141
A.8.22.5	E-UTRAN FDD-FDD intra-frequency event triggered reporting in DRX based on CSI-RS based	
	discovery signal	1141
A.8.22.5.1	Test Purpose and Environment	
A.8.22.5.2	Test Requirements.	
A.8.22.6	E-UTRAN TDD-TDD intra-frequency event triggered reporting in DRX based on CSI-RS based	
11.0.22.0	discovery signal	1144
A.8.22.6.1	Test Purpose and Environment	
A.8.22.6.2	Test Requirements.	
A.8.22.7	E-UTRAN FDD-FDD Inter-frequency event triggered reporting in DRX based on CSI-RS based	117/
A.0.22.1		1147
A.8.22.7.1	discovery signal	
A.8.22.7.2	Test Requirements.	
A.8.22.8	E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation conditions and the control of the control o	
A 0 22 0 1	in DRX based on CSI-RS based discovery signal	
A.8.22.8.1	Test Purpose and Environment	
A.8.22.8.2	Test Requirements.	
A.8.22.9	E-UTRAN FDD event triggered reporting under deactivated SCell in non-DRX based on CRS bases.	
	discovery signal	
A.8.22.9.1	Test Purpose and Environment	
A.8.22.9.2	Test Requirements	
A.8.22.10	E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX based on CRS based	
	discovery signal	
Δ 8 22 10 1	Test Purpose and Environment	1156

A.8.22.10.2	Test Requirements	.1158
A.8.22.11	E-UTRAN FDD event triggered reporting under deactivated SCell in non-DRX based on CSI-RS	
	based discovery signal	.1159
A.8.22.11.1	Test Purpose and Environment	.1159
A.8.22.11.2	Test Requirements	.1162
A.8.22.12	E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX based on CSI-RS	
	based discovery signal	.1162
A.8.22.12.1	Test Purpose and Environment	.1162
A.8.22.12.2	Test Requirements	.1165
A.8.23 E-	UTRAN Dual Connectivity Measurements	
A.8.23.1	E-UTRAN FDD-FDD DC intra-frequency event triggered reporting with DRX in synchronous DC	.1165
A.8.23.1.1	Test Purpose and Environment	
A.8.23.1.2	Test Requirements	.1168
A.8.23.2	E-UTRAN FDD-FDD DC intra-frequency event triggered reporting with DRX in asynchronous DC	
A.8.23.2.1	Test Purpose and Environment	.1168
A.8.23.2.2	Test Requirements	.1171
A.8.23.3	E-UTRAN TDD-TDD DC intra-frequency event triggered reporting with DRX in synchronous DC	.1171
A.8.23.3.1	Test Purpose and Environment	.1171
A.8.23.3.2	Test Requirements	
A.8.23.4	E-UTRAN FDD-FDD DC inter-frequency event triggered reporting with DRX in synchronous DC	
A.8.23.4.1	Test Purpose and Environment	
A.8.23.4.2	Test Requirements	
A.8.23.5	E-UTRAN FDD-FDD DC inter-frequency event triggered reporting with DRX in asynchronous DC	
A.8.23.5.1	Test Purpose and Environment	
A.8.23.5.2	Test Requirements	
A.8.23.6	E-UTRAN TDD-TDD DC inter-frequency event triggered reporting with DRX in synchronous DC	
A.8.23.6.1	Test Purpose and Environment	
A.8.23.6.2	Test Requirements	
A.8.23.7	E-UTRAN FDD-FDD Addition and Release Delay of known PSCell in Synchronous DC	
A.8.23.7.1	Test Purpose and Environment	
A.8.23.7.2	Test Requirements	
A.8.23.8	E-UTRAN FDD-FDD Addition and Release Delay of known PSCell in Asynchronous DC	
A.8.23.8.1	Test Purpose and Environment	
A.8.23.8.2	Test Requirements	
A.8.23.9	E-UTRAN TDD Addition and Release Delay of known PSCell in Synchronous DC	
A.8.23.9.1	Test Purpose and Environment	
A.8.23.9.2	Test Requirements	
	oximity-based Services	
A.8.24.1	E-UTRAN FDD - Initiation/Cease of SLSS Transmission with ProSe Direct Discovery	
A.8.24.1.1	Test Purpose and Environment	
A.8.24.1.2	Test Requirements	
A.8.24.2	E-UTRAN TDD - Initiation/Cease of SLSS Transmission with ProSe Direct Discovery	
A.8.24.2.1	Test Purpose and Environment	
A.8.24.2.2	Test Requirements	
A.8.24.3	E-UTRAN FDD - Initiation/Cease of SLSS Transmission with ProSe Direct Communication	
A.8.24.3.1	Test Purpose and Environment	
A.8.24.3.2	Test Requirements	
	urement Performance Requirements	
A.9.1 RS	SRP	
A.9.1.1	FDD Intra frequency case	.1198
A.9.1.1.1	Test Purpose and Environment	
A.9.1.1.2	Test parameters	.1198
A.9.1.1.3	Test Requirements	.1200
A.9.1.2	TDD Intra frequency case	.1200
A.9.1.2.1	Test Purpose and Environment	
A.9.1.2.2	Test parameters	.1200
A.9.1.2.3	Test Requirements	
A.9.1.3	FDD—FDD Inter frequency case	.1202
A.9.1.3.1	Test Purpose and Environment	.1202
A.9.1.3.2	Test parameters	.1202
A.9.1.3.3	Test Requirements	.1204

A.9.1.4	TDD—TDD Inter frequency case	1204
A.9.1.4.1	Test Purpose and Environment	1204
A.9.1.4.2	Test parameters	1204
A.9.1.4.3	Test Requirements	1206
A.9.1.5	FDD—TDD Inter frequency case	1207
A.9.1.5.1	Test Purpose and Environment	1207
A.9.1.5.2	Test parameters	1207
A.9.1.5.3	Test Requirements	1208
A.9.1.6	FDD RSRP for E-UTRAN Carrier Aggregation	1209
A.9.1.6.1	Test Purpose and Environment	1209
A.9.1.6.2	Test parameters	
A.9.1.6.3	Test Requirements	
A.9.1.7	TDD RSRP for E-UTRAN Carrier Aggregation	1211
A.9.1.7.1	Test Purpose and Environment	
A.9.1.7.2	Test parameters	
A.9.1.7.3	Test Requirements	1213
A.9.1.8	FDD RSRP under Time-Domain Measurement Resource Restriction with Non-MBSFN ABS	1213
A.9.1.8.1	Test Purpose and Environment	1213
A.9.1.8.2	Test parameters	1213
A.9.1.8.3	Test Requirements	1216
A.9.1.9	TDD RSRP under Time-Domain Measurement Resource Restriction with Non-MBSFN ABS	1216
A.9.1.9.1	Test Purpose and Environment	1216
A.9.1.9.2	Test parameters	
A.9.1.9.3	Test Requirements	
A.9.1.10	FDD RSRP under Time-Domain Measurement Resource Restriction with MBSFN ABS	1219
A.9.1.10.1	Test Purpose and Environment	1219
A.9.1.10.2	Test parameters	
A.9.1.10.3	Test Requirements	
A.9.1.11	TDD RSRP under Time-Domain Measurement Resource Restriction with MBSFN ABS	
A.9.1.11.1	Test Purpose and Environment	1221
A.9.1.11.2	Test parameters	
A.9.1.11.3	Test Requirements	1224
A.9.1.12	FDD RSRP for E-UTRAN Carrier Aggregation for 20MHz	1224
A.9.1.12.1	Test Purpose and Environment	1224
A.9.1.12.2	Test parameters	1224
A.9.1.12.3	Test Requirements	
A.9.1.13	TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz	1225
A.9.1.13.1	Test Purpose and Environment	1225
A.9.1.13.2	Test parameters	1225
A.9.1.13.3	Test Requirements	1226
A.9.1.14	FDD RSRP under Time-Domain Measurement Resource Restriction with CRS Assistance	
	Information and Non-MBSFN ABS	1226
A.9.1.14.1	Test Purpose and Environment	1226
A.9.1.14.2	Test parameters	1226
A.9.1.14.3	Test Requirements	1229
A.9.1.15	TDD RSRP under Time-Domain Measurement Resource Restriction with CRS Assistance	
	Information and Non-MBSFN ABS	1229
A.9.1.15.1	Test Purpose and Environment	1229
A.9.1.15.2	Test parameters	1229
A.9.1.15.3	Test Requirements	1231
A.9.1.16	FDD Intra frequency case for 5MHz Bandwidth	1232
A.9.1.16.1	Test Purpose and Environment	1232
A.9.1.16.2	Test parameters	1232
A.9.1.16.3	Test Requirements	
A.9.1.17	FDD—FDD Inter frequency case for 5MHz Bandwidth	
A.9.1.17.1	Test Purpose and Environment	1234
A.9.1.17.2	Test parameters	1234
A.9.1.17.3	Test Requirements	
A.9.1.18	FDD RSRP for E-UTRAN Carrier Aggregation for 10MHz + 5MHz	
A.9.1.18.1	Test Purpose and Environment	1236
A.9.1.18.2	Test parameters	1236
A.9.1.18.3	Test Requirements	

A.9.1.19	TDD RSRP for E-UTRAN Carrier Aggregation for 10MHz + 5MHz	1238
A.9.1.19.1	Test Purpose and Environment	1238
A.9.1.19.2	Test parameters	
A.9.1.19.3	Test Requirements	
A.9.1.20	FDD RSRP for E-UTRAN Carrier Aggregation for 5MHz + 5MHz bandwidth	1238
A.9.1.20.1	Test Purpose and Environment	1238
A.9.1.20.2	Test parameters	1238
A.9.1.20.3	Test Requirements	
A.9.1.21	TDD RSRP for E-UTRAN Carrier Aggregation for 5MHz + 5MHz bandwidth	1240
A.9.1.21.1	Test Purpose and Environment	1240
A.9.1.21.2	Test parameters	1240
A.9.1.21.3	Test Requirements	1240
A.9.1.22	RSRP for E-UTRAN TDD-FDD Carrier Aggregation with PCell in FDD	1240
A.9.1.22.1	Test Purpose and Environment	1240
A.9.1.22.2	Test parameters	1241
A.9.1.22.3	Test Requirements	1243
-	The relative accuracy of inter-frequency RSRP measurements between the primary and secondary	
	component carriers for Cell 2 relative to Cell 1 shall fulfil the requirements defined in clause	
	9.1.11.3.A.9.1.23 RSRP for E-UTRAN TDD-FDD Carrier Aggregation with PCell in TDD	1244
A.9.1.23.1	Test Purpose and Environment	1244
A.9.1.23.2	Test parameters	1244
A.9.1.23.3	Test Requirements	
A.9.1.24	TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz + 10MHz	1247
A.9.1.24.1	Test Purpose and Environment	
A.9.1.24.2	Test parameters	1247
A.9.1.24.3	Test Requirements	1247
A.9.1.25	FDD intra-frequency absolute and relative RSRP accuracies in CRS based discovery signal	
A.9.1.25.1	Test Purpose and Environment	
A.9.1.25.2	Test parameters	
A.9.1.25.3	Test Requirements	
A.9.1.26	TDD intra-frequency absolute and relative RSRP accuracies in CRS based discovery signal	
A.9.1.26.1	Test Purpose and Environment	
A.9.1.26.2	Test parameters	
A.9.1.26.3	Test Requirements	
A.9.1.27	FDD—FDD inter-frequency absolute and relative RSRP accuracies in CRS based discovery signal	1252
A.9.1.27.1	Test Purpose and Environment	
A.9.1.27.2	Test parameters	
A.9.1.27.3	Test Requirements	1254
A.9.1.28	TDD—TDD inter-frequency absolute and relative RSRP accuracies in CRS based discovery signal	1254
A.9.1.28.1	Test Purpose and Environment	1254
A.9.1.28.2	Test parameters	1254
A.9.1.28.3	Test Requirements	1256
A.9.1.29	FDD intra frequency absolute and relative CSI-RSRP accuracies in CSI-RS based discovery signal	1256
A.9.1.29.1	Test Purpose and Environment	1256
A.9.1.29.2	Test parameters	1256
A.9.1.29.3	Test Requirements	
A.9.1.30	TDD intra frequency absolute and relative CSI-RSRP accuracies in CSI-RS based discovery signal	
A.9.1.30.1	Test Purpose and Environment	
A.9.1.30.2	Test parameters	
A.9.1.30.3	Test Requirements	
A.9.1.31	FDD—FDD inter-frequency absolute and relative CSI-RSRP accuracies in CSI-RS based discovery	
	signal	1260
A.9.1.31.1	Test Purpose and Environment	
A.9.1.31.2	Test parameters	
A.9.1.31.3	Test Requirements	
A.9.1.32	TDD—TDD inter-frequency absolute and relative CSI-RSRP accuracies in CSI-RS based discovery	
	signal	
A.9.1.32.1	Test Purpose and Environment	
A.9.1.32.2	Test parameters	
A.9.1.32.3	Test Requirements	
A.9.1.33	FDD absolute and relative RSRP accuracies for E-UTRAN Carrier Aggregation in CRS based	
	discovery signal	1265

A.9.1.33.1	Test Purpose and Environment	1265
A.9.1.33.2	Test parameters	1265
A.9.1.33.3	Test Requirements	1267
A.9.1.34	TDD absolute and relative RSRP accuracies for E-UTRAN Carrier Aggregation in CRS based	
	discovery signal	
A.9.1.34.1	Test Purpose and Environment	
A.9.1.34.2	Test parameters	
A.9.1.34.3	Test Requirements	1269
A.9.1.35	FDD absolute and relative CSI-RSRP accuracies for E-UTRAN Carrier Aggregation in CSI-RS	
	based discovery signal	
A.9.1.35.1	Test Purpose and Environment	
A.9.1.35.2	Test parameters	
A.9.1.35.3	Test Requirements	1271
A.9.1.36	TDD absolute and relative CSI-RSRP accuracies for E-UTRAN Carrier Aggregation in CSI-RS	
	based discovery signal	
A.9.1.36.1	Test Purpose and Environment	
A.9.1.36.2	Test parameters	
A.9.1.36.3	Test Requirements	
A.9.1.37	3 DL PCell in FDD RSRP for E-UTRAN in Carrier Aggregation	
A.9.1.37.1	Test Purpose and Environment	
A.9.1.37.2	Test parameters	
A.9.1.37.3	Test Requirements	
A.9.1.38	3 DL PCell in TDD RSRP for E-UTRAN in Carrier Aggregation	
A.9.1.38.1	Test Purpose and Environment	
A.9.1.38.2	Test parameters	
A.9.1.38.3	Test Requirements	
A.9.1.39	3 DL FDD RSRP for E-UTRAN in Carrier Aggregation	
A.9.1.39.1	Test Purpose and Environment	
A.9.1.39.2	Test parameters	
A.9.1.39.3	Test Requirements	
A.9.1.40	3 DL TDD RSRP for E-UTRAN in Carrier Aggregation	
A.9.1.40.1	Test Purpose and Environment	
A.9.1.40.2	Test parameters	
A.9.1.40.3	Test Requirements	
A.9.1.41	FD-FDD RSRP Intra frequency case for UE category 0	
A.9.1.41.1	Test Purpose and Environment	
A.9.1.41.2	Test parameters	
A.9.1.41.3	Test Requirements	
A.9.1.42	HD-FDD RSRP Intra frequency case for UE category 0	1291
A.9.1.42.1	Test Purpose and Environment	
A.9.1.42.2	Test parameters	
A.9.1.42.3	Test Requirements	
A.9.1.43	TDD RSRP Intra frequency case for UE category 0	
A.9.1.43.1	Test Purpose and Environment	
A.9.1.43.2	Test parameters	
A.9.1.43.3	Test Requirements	
	SRQ	
A.9.2.1	FDD Intra frequency case	
A.9.2.1.1	Test Purpose and Environment	
A.9.2.1.2	Test parameters	
A.9.2.1.3	Test Requirements	
A.9.2.2	TDD Intra frequency case	
A.9.2.2.1	Test Purpose and Environment	
A.9.2.2.2	Test parameters	
A.9.2.2.3	Test Requirements	
A.9.2.3	FDD—FDD Inter frequency case	
A.9.2.3.1	Test Purpose and Environment	
A.9.2.3.2	Test parameters	
A.9.2.3.3	Test Requirements	
A.9.2.4	TDD—TDD Inter frequency case	
A.9.2.4.1	Test Purpose and Environment	
A.9.2.4.2	Test parameters	1301

A.9.2.4.3	Test Requirements	1303
A.9.2.4A	FDD—TDD Inter frequency case	1304
A.9.2.4A.1	Test Purpose and Environment	1304
A.9.2.4A.2	Test parameters	1304
A.9.2.4A.3	Test Requirements	1306
A.9.2.5	FDD RSRQ for E-UTRA Carrier Aggregation	1306
A.9.2.5.1	Test Purpose and Environment	1306
A.9.2.5.2	Test parameters	1307
A.9.2.5.3	Test Requirements	1309
A.9.2.6	TDD RSRQ for E-UTRA Carrier Aggregation	1309
A.9.2.6.1	Test Purpose and Environment	1309
A.9.2.6.2	Test parameters	1309
A.9.2.6.3	Test Requirements	1311
A.9.2.7	FDD RSRQ under Time Domain Measurement Resource Restriction with Non-MBSFN ABS	1311
A.9.2.7.1	Test Purpose and Environment	1311
A.9.2.7.2	Test parameters	1311
A.9.2.7.3	Test Requirements	1314
A.9.2.8	TDD RSRQ under Time Domain Measurement Resource Restriction with Non-MBSFN ABS	1314
A.9.2.8.1	Test Purpose and Environment	1314
A.9.2.8.2	Test parameters	1314
A.9.2.8.3	Test Requirements	1317
A.9.2.9	FDD RSRQ under Time Domain Measurement Resource Restriction with MBSFN ABS	
A.9.2.9.1	Test Purpose and Environment	1317
A.9.2.9.2	Test parameters	1317
A.9.2.9.3	Test Requirements	
A.9.2.10	TDD Intra frequency case under time domain measurement resource restriction with MBSFN AB	
A.9.2.10.1	Test Purpose and Environment	
A.9.2.10.2	Test parameters	
A.9.2.10.3	Test Requirements	
A.9.2.11	FDD RSRQ for E-UTRA Carrier Aggregation (20MHz bandwidth)	
A.9.2.11.1	Test Purpose and Environment	
A.9.2.11.2	Test parameters	
A.9.2.11.3	Test Requirements	
A.9.2.12	TDD RSRQ for E-UTRA Carrier Aggregation (20MHz bandwidth)	
A.9.2.12.1	Test Purpose and Environment	
A.9.2.12.2	Test parameters	1324
A.9.2.12.3	Test Requirements	
A.9.2.13	Void	
A.9.2.13.1	Void	
A.9.2.13.2	Void	
A.9.2.13.3	Void	1326
A.9.2.14	Void	1326
A.9.2.14.1	Void	1326
A.9.2.14.2	Void	
A.9.2.14.3	Void	
A.9.2.15	FDD RSRQ under Time Domain Measurement Resource Restriction with CRS Assistance	
	Information and Non-MBSFN ABS	1326
A.9.2.15.1	Test Purpose and Environment	
A.9.2.15.2	Test parameters	
A.9.2.15.3	Test Requirements	
A.9.2.16	TDD RSRQ under Time Domain Measurement Resource Restriction with CRS Assistance	
	Information and Non-MBSFN ABS	1329
A.9.2.16.1	Test Purpose and Environment	
A.9.2.16.2	Test parameters	
A.9.2.16.3	Test Requirements	
A.9.2.17	FDD Intra frequency case for 5 MHz bandwidth	
A.9.2.17.1	Test Purpose and Environment	
A.9.2.17.2	Test parameters	
A.9.2.17.3	Test Requirements	
A.9.2.18	FDD—FDD Inter frequency case for 5MHz bandwidth	
A.9.2.18.1	Test Purpose and Environment	
A.9.2.18.2	Test parameters	

A.9.2.18.3	Test Requirements	
A.9.2.19	FDD-FDD Inter Frequency WB-RSRQ	
A.9.2.19.1	Test Purpose and Environment	
A.9.2.19.2	Test parameters	
A.9.2.19.3	Test Requirements	
A.9.2.20	TDD—TDD Inter Frequency WB-RSRQ	
A.9.2.20.1	Test Purpose and Environment	
A.9.2.20.2	Test parameters	
A.9.2.20.3	Test Requirements	
A.9.2.21	FDD RSRQ for E-UTRAN Carrier Aggregation for 10MHz+5MHz	
A.9.2.21.1	Test Purpose and Environment	
A.9.2.21.2	Test parameters	
A.9.2.21.3	Test Requirements	
A.9.2.22	TDD RSRQ for E-UTRAN Carrier Aggregation for 10MHz+5MHz	
A.9.2.22.1	Test Purpose and Environment	
A.9.2.22.2	Test parameters	
A.9.2.22.3	Test Requirements	
A.9.2.23	FDD RSRQ for E-UTRA Carrier Aggregation (5MHz + 5MHz bandwidth)	
A.9.2.23.1	Test Purpose and Environment	
A.9.2.23.2	Test parameters	
A.9.2.23.3	Test Requirements	
A.9.2.24	TDD RSRQ for E-UTRA Carrier Aggregation (5MHz + 5MHz bandwidth)	
A.9.2.24.1	Test Purpose and Environment	
A.9.2.24.2	Test parameters	
A.9.2.24.3	Test Requirements	
A.9.2.25	RSRQ for E-UTRAN TDD-FDD Carrier Aggregation with PCell in FDD	
A.9.2.25.1	Test Purpose and Environment	
A.9.2.25.2	Test parameters	
A.9.2.25.3	Test Requirements	
A.9.2.26	RSRQ for E-UTRAN TDD-FDD Carrier Aggregation with PCell in TDD	
A.9.2.26.1	Test Purpose and Environment	
A.9.2.26.2	Test parameters	
A.9.2.26.3	Test Requirements	
A.9.2.27	TDD RSRQ for E-UTRAN Carrier Aggregation for 20MHz+10MHz	
A.9.2.27.1	Test Purpose and Environment	
A.9.2.27.2	Test parameters	
A.9.2.27.3	Test Requirements	
A.9.2.28	FDD intra-frequency absolute RSRQ accuracy with CRS based discovery signal	
A.9.2.28.1	Test Purpose and Environment	
A.9.2.28.2	Test parameters	
A.9.2.28.3	Test Requirements	
A.9.2.29	TDD intra-frequency absolute RSRQ accuracy with CRS based discovery signal	
A.9.2.29.1	Test Purpose and Environment	
A.9.2.29.2	Test parameters	
A.9.2.29.3	Test Requirements.	
A.9.2.30	FDD-FDD inter-frequency absolute and relative RSRQ accuracies with CRS based discovery signal.	
A.9.2.30.1	Test Purpose and Environment	
A.9.2.30.2	Test parameters	
A.9.2.30.3	Test Requirements.	
A.9.2.31	TDD-TDD inter-frequency absolute and relative RSRQ accuracies with CRS based discovery signal.	
A.9.2.31.1	Test Purpose and Environment	
A.9.2.31.2	Test parameters	
A.9.2.31.3	Test Requirements.	1361
A.9.2.32	FDD absolute and relative RSRQ accuracy for E-UTRAN Carrier Aggregation in CRS based	1261
100000	discovery signal	
A.9.2.32.1	Test Purpose and Environment	
A.9.2.32.2	Test parameters	
A.9.2.32.3	Test Requirements.	1363
A.9.2.33	TDD absolute and relative RSRQ accuracy for E-UTRAN Carrier Aggregation in CRS based	1266
1 0 2 22 1	discovery signal	
A.9.2.33.1	Test Purpose and Environment	
A.9.2.33.2	Test parameters	.1303

A.9.2.33.3	Test Requirements	1366
A.9.2.34	FDD—FDD Inter frequency new RSRQ	1366
A.9.2.34.1	Test Purpose and Environment	1366
A.9.2.34.2		
A.9.2.34.3		
A.9.2.35	TDD—TDD Inter frequency new RSRQ	
A.9.2.35.1		
A.9.2.35.2	1	
A.9.2.35.3		
A.9.2.36	FDD—FDD Inter frequency RSRQ measured on all OFDM symbols	
A.9.2.36.1		
A.9.2.36.2		
A.9.2.36.3	•	
A.9.2.37	TDD—TDD Inter frequency RSRQ measurement on all OFDM symbols	
A.9.2.37.1		
A.9.2.37.2		
A.9.2.37.3		
A.9.2.38	3 DL PCell in FDD RSRQ for E-UTRAN in Carrier Aggregation	
A.9.2.38.1		
A.9.2.38.2	1	
A.9.2.38.3		
A.9.2.39	3 DL PCell in TDD RSRQ for E-UTRAN in Carrier Aggregation	
A.9.2.39.1		
A.9.2.39.2	<u> •</u>	
A.9.2.39.3	•	
A.9.2.40	3 DL FDD RSRQ for E-UTRAN in Carrier Aggregation	
A.9.2.40.1		
A.9.2.40.2		
A.9.2.40.3	•	
A.9.2.41	3 DL TDD RSRQ for E-UTRAN in Carrier Aggregation	
A.9.2.41.1		
A.9.2.41.2		
A.9.2.41.3	•	
A.9.2.42	FD-FDD RSRQ Intra frequency case for UE category 0	
A.9.2.42.1		
A.9.2.42.2	<u> •</u>	
A.9.2.42.3	•	
A.9.2.43	HD-FDD RSRQ Intra frequency case for UE category 0	
A.9.2.43.1	· · · · · · · · · · · · · · · · · · ·	
A.9.2.43.2		
A.9.2.43.3		
A.9.2.44	TDD RSRQ Intra frequency case for UE category 0	
A.9.2.44.1		
A.9.2.44.2	.	
A.9.2.44.3	1	
A.9.3	UTRAN FDD CPICH RSCP	
A.9.3.1	E-UTRAN FDD	
A.9.3.1.1	Test Purpose and Environment	
A.9.3.1.2	Parameters	
A.9.3.1.2	Test Requirements.	
A.9.3.2	E-UTRAN TDD	
A.9.3.2.1	Test Purpose and Environment	
A.9.3.2.1 A.9.3.2.2	Parameters	
A.9.3.2.2 A.9.3.2.3	Test Requirements	
A.9.3.2.3 A.9.3.3	E-UTRAN FDD for 5MHz Bandwidth	
A.9.3.3.1	Test Purpose and Environment	
A.9.3.3.1 A.9.3.3.2	Parameters	
A.9.3.3.2 A.9.3.3.3	Test Requirements	
A.9.3.3.3 A.9.4	UTRAN FDD CPICH Ec/No	
A.9.4.1	E-UTRAN FDD	
A.9.4.1 A.9.4.1.1	Test Purpose and Environment	
Α.9.4.1.1	Parameters	1390 1308

A.9.4.1.3	Test Requirements	
A.9.4.2	E-UTRAN TDD	
A.9.4.2.1	Test Purpose and Environment	
A.9.4.2.2	Parameters	
A.9.4.2.3	Test Requirements.	
A.9.4.3	E-UTRAN FDD for 5MHz Bandwidth	
A.9.4.3.1	Test Purpose and Environment	
A.9.4.3.2	Parameters	
A.9.4.3.3	Test Requirements	
A.9.5	UTRAN TDD measurement	
A.9.5.1	P-CCPCH RSCP absolute accuracy for E-UTRAN FDD	
A.9.5.1.1	Test Purpose and Environment	
A.9.5.1.2	Test parameters	
A.9.5.1.3	Test Requirements	
A.9.5.2	P-CCPCH RSCP absolute accuracy for E-UTRAN TDD	
A.9.5.2.1	Test Purpose and Environment	
A.9.5.2.2	Test parameters	
A.9.5.2.3	Test Requirements	
A.9.6	GSM Carrier RSSI	
A.9.6.1	E-UTRAN FDD	
A.9.6.1.1	Test Purpose and Environment	
A.9.6.1.2	Test Requirements	
A.9.6.2	E-UTRAN TDD	
A.9.6.2.1	Test Purpose and Environment	
A.9.6.2.2	Test Requirements	
A.9.7	UE Rx – Tx Time Difference	
A.9.7.1	E-UTRAN FDD UE Rx – Tx time difference case	
A.9.7.1.1	Test Purpose and Environment	
A.9.7.1.2	Test parameters	
A.9.7.1.3	Test Requirements	
A.9.7.2	E-UTRA TDD	
A.9.7.2.1	Test Purpose and Environment	
A.9.7.2.2 A.9.7.2.3	Test Parameters	
A.9.7.2.3 A.9.7.3	Test Requirements E-UTRAN FDD UE Rx–Tx Time Difference under Time-Domain Measurement Resource	1418
A.9.7.3	Restriction with Non-MBSFN ABS	1/110
A.9.7.3.1	Test Purpose and Environment	
A.9.7.3.1 A.9.7.3.2	Test ruipose and Environment Test parameters	
A.9.7.3.2 A.9.7.3.3	Test Requirements.	
A.9.7.3.3 A.9.7.4	E-UTRAN TDD UE Rx-Tx Time Difference under Time-Domain Measurement Resource	1421
Л.Э.Т.	Restriction with Non-MBSFN ABS	1/21
A.9.7.4.1	Test Purpose and Environment	
A.9.7.4.2	Test Parameters	
A.9.7.4.3	Test Requirements	
A.9.7.5	E-UTRAN FDD UE Rx–Tx time difference under Time Domain Measurement Resource Restriction	
11.7.7.5	with CRS Assistance Information and Non-MBSFN ABS	
A.9.7.5.1	Test Purpose and Environment	
A.9.7.5.2	Test parameters	
A.9.7.5.3	Test Requirements	
A.9.7.6	E-UTRAN TDD UE Rx-Tx Time Difference under Time-Domain Measurement Resource	
	Restriction with CRS Assistance Information and Non-MBSFN ABS	1427
A.9.7.6.1	Test Purpose and Environment	
A.9.7.6.2	Test Parameters	
A.9.7.6.3	Test Requirements	
A.9.8	RSTD	
A.9.8.1	E-UTRAN FDD RSTD intra frequency case	
A.9.8.1.1	Test Purpose and Environment	
A.9.8.1.2	Test Requirements	
A.9.8.2	E-UTRAN TDD RSTD intra frequency case	
A.9.8.2.1	Test Purpose and Environment	
A.9.8.2.2	Test Requirements	
A.9.8.3	E-UTRAN FDD-FDD RSTD inter frequency case	

A.9.8.3.1	Test Purpose and Environment	1435
A.9.8.3.2	Test Requirements	
A.9.8.4	E-UTRAN TDD-TDD RSTD inter frequency case	1437
A.9.8.4.1	Test Purpose and Environment	
A.9.8.4.2	Test Requirements	
A.9.8.5	E-UTRAN FDD RSTD Measurement Accuracy in Carrier Aggregation	1439
A.9.8.5.1	Test Purpose and Environment	
A.9.8.5.2	Test Requirements	
A.9.8.6	E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation	
A.9.8.6.1	Test Purpose and Environment	
A.9.8.6.2	Test Requirements.	
A.9.8.7	E-UTRAN FDD RSTD Measurement Accuracy in Carrier Aggregation for 20MHz bandwidth	
A.9.8.7.1	Test Purpose and Environment	
A.9.8.7.2	Test Requirements.	
A.9.8.8	E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 20MHz bandwidth	
A.9.8.8.1	Test Purpose and Environment	
A.9.8.8.2	Test Requirements.	
A.9.8.9	E-UTRAN FDD RSTD Measurement Accuracy in Carrier Aggregation for 10MHz+5MHz	
A.9.8.9.1	Test Purpose and Environment	
A.9.8.9.2	Test Requirements	
A.9.8.10	E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 10MHz+5MHz	
A.9.8.10.	1	
A.9.8.10.2	1	
A.9.8.11	E-UTRAN FDD RSTD Measurement Accuracy in Carrier Aggregation for 5 + 5MHz bandwidth	
A.9.8.11.	1 Test Purpose and Environment	1449
A.9.8.11.2	2 Test Requirements	1450
A.9.8.12	E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 5+5MHz bandwidth	1450
A.9.8.12.		
A.9.8.12.2		
A.9.8.13	E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 20MHz+10MHz	
A.9.8.13.		
A.9.8.13.2		
A.9.8.14	E-UTRAN FDD RSTD Measurement Accuracy in 3DL Carrier Aggregation	
A.9.8.14.		
A.9.8.14.2	•	
A.9.8.15	E-UTRAN TDD RSTD Measurement Accuracy in 3DL Carrier Aggregation	
A.9.8.15		
	<u>*</u>	
A.9.8.15.2	1	
A.9.9	RSRP and RSRQ on the serving cell	
A.9.9.1	FDD Intra frequency serving cell case	
A.9.9.1.1	Test Purpose and Environment	
A.9.9.1.2	Test parameters	
A.9.9.1.3	Test Requirements	
A.9.9.2	TDD Intra frequency serving cell case	
A.9.9.2.1	Test Purpose and Environment	
A.9.9.2.2	Test parameters	1463
A.9.9.2.3	Test Requirements	1465
1 10 D	' ' 1 10 ' ' A C 110 1 d' 00 d	1 1 6
	oximity-based Services in Any Cell Selection State	
A.10.1	E-UTRAN FDD – UE ProSe Direct Communication Transmission Timing Accuracy Test	
A.10.1.1	Test Purpose and Environment	
A.10.1.2	Test Requirements	
A.10.2	E-UTRAN FDD – Initiation/Cease of SLSS Transmission with ProSe Direct Communication	
A.10.2.1	Test Purpose and Environment	
A.10.2.2	Test Requirements	1468
A.10.3	E-UTRAN FDD – SyncRef UE Selection / Reselection Test	
A.10.3.1	Test Purpose and Environment	
A.10.3.2	Test Requirements	
A.10.4	E-UTRAN FDD – Cell Identification on downlink frequency associated with ProSe frequency (when	
	UE is transmitting for ProSe)	1470
A.10.4.1	Test Purpose and Environment	
A 10.4.2	Test Requirements	1472

Annex	B (normative):	Conditions for RRM requirements applicability for operating bands .	1473
B.1 C	Conditions for E-UTI	RAN RRC_IDLE state mobility	1473
B.1.1		surements of intra-frequency E-UTRAN cells for cell re-selection	
B.1.2		surements of inter-frequency E-UTRAN cells for cell re-selection	
B.2 C	Conditions for UE M	easurements Procedures in RRC_CONNECTED State	1473
B.2.1		FRAN intra-frequency measurements	
B.2.2	Conditions for E-U	ΓRAN intra-frequency measurements with autonomous gaps	.1474
B.2.3	Conditions for E-U	FRAN inter-frequency measurements	.1474
B.2.4	Conditions for E-U	TRAN inter-frequency measurements with autonomous gaps	.1475
B.2.5		FRAN OTDOA intra-frequency RSTD Measurements	
B.2.6		FRAN OTDOA inter-frequency RSTD Measurements	
B.2.7 B.2.8		surements of the secondary component carrier with deactivated SCell	.1476
D.2.0		TRAN Intra-rrequency Measurements under Time Domain Measurement Resource	.1476
B.2.9		ΓRAN Intra-Frequency Measurements under Time Domain Measurement Resource	1 477
D 2 10		S Assistance Information	
B.2.10		FRAN intra-frequency discovery signal measurements	
B.2.11		FRAN inter-frequency discovery signal measurements	
B.2.11.1		C-UTRAN inter-frequency CRS-based measurements	
B.2.11.2		UTRAN inter-frequency CSI-RS based measurements	.14/8
B.2.12		ΓRAN intra-frequency discovery signal measurements under operation with frame	.1478
B.2.12		ΓRAN inter-frequency discovery signal measurements under operation with frame	1.470
D 2 12 1		NITED AND CORE 1 1 1	
B.2.12.1 B.2.12.2		UTRAN inter-frequency CRS-based measurements	
В.3 С	Conditions for massy	rements performance requirements for UE	1/00
		-frequency RSRP and RSRQ Accuracy Requirements	
B.3.1 B.3.2		-frequency RSRP and RSRQ Accuracy Requirements	
в.з.2 В.3.3		-frequency RSRP and RSRQ Accuracy Requirements	
в.з.з В.3.4		-frequency RSRF and RSRQ Accuracy Requirements	
B.3.5	Conditions for HE I	Rx – Tx time difference	.1460 1780
B.3.6		-frequency Reference Signal Time Difference (RSTD) measurements	
B.3.7		-frequency RSTD measurements	
B.3.8		-Frequency Relative RSRP Accuracy Requirements	
B.3.9		-Frequency Absolute RSRP and RSRQ Accuracy Requirements under Time	.1401
	Domain Measureme	ent Resource Restriction	.1481
B.3.10		-Frequency Relative RSRP Accuracy Requirements under Time Domain	4.404
D 0 11		urce Restriction	.1481
B.3.11		-Frequency Absolute RSRP and RSRQ Accuracy Requirements under Time ent Resource Restriction with CRS Assistance Information	.1482
B.3.12		-Frequency Relative RSRP Accuracy Requirements under Time Domain	
		arce Restriction with CRS Assistance Information	.1482
B.3.13		Rx–Tx Time Difference Measurement under Time Domain Measurement Resource S Assistance Information	1492
D 2 14			
B.3.14 B.3.14.1		-Frequency Absolute Discovery Signal Measurement Accuracy Requirementsntra-frequency CRS-based measurements	
B.3.14.1		ntra-frequency CKS-based measurements	
в.з.14.2 В.3.15		-Frequency Relative Discovery Signal Measurement Accuracy Requirements	
в.з.15 В.3.15.1		ntra-frequency CRS-based measurements	
B.3.15.2		ntra-frequency CSI-RS-based measurements	
в.з.13.2 В.3.16		-Frequency Absolute Discovery Signal Measurement Accuracy Requirements	
в.з.16 В.3.16.1		nter-frequency CRS-based measurements	
B.3.16.2		nter-frequency CSI-RS-based measurements	
B.3.10.2 B.3.17		-Frequency Relative Discovery Signal Measurement Accuracy Requirements	
B.3.17.1		nter-frequency CRS-based measurements	
B.3.17.2		nter-frequency CSI-RS-based measurements	
B.3.18		-frequency Absolute RS-SINR Accuracy Requirements	
B.3.19		-frequency Absolute RS-SINR Accuracy Requirements	
B 3 20		-frequency Relative RS-SINR Accuracy Requirements	

B.3.23	Conditions for Intra-Frequency Absolute Accuracy Requirements for Measurements under Operation	
	with Frame Structure 3	
B.3.23.1	Conditions for RSRP measurements	1485
B.3.23.2	Conditions for RSRQ measurements	1485
B.3.23.3	Conditions for CSI-RSRP measurements	1485
B.3.22	Conditions for Intra-Frequency Relative Accuracy Requirements for Measurements under Operation	
	with Frame Structure 3	
B.3.22.1	Conditions for RSRP measurements	
B.3.22.2	Conditions for RSRQ measurements	
B.3.22.3	Conditions for CSI-RSRP measurements	1486
B.3.23	Conditions for Inter-Frequency Absolute Accuracy Requirements for Measurements under Operation	4.40.4
D 0 00 1	with Frame Structure 3	
B.3.23.1	Conditions for RSRP measurements	
B.3.23.2	Conditions for RSRQ measurements	
B.3.23.3	Conditions for CSI-RSRP measurements	1487
B.3.24	Conditions for Inter-Frequency Relative Accuracy Requirements for Measurements under Operation	1.405
D 2 2 4 1	with Frame Structure 3	
B.3.24.1	Conditions for RSRP measurements	
B.3.24.2	Conditions for RSRQ measurements	
B.3.24.3	Conditions for CSI-RSRP measurements	1487
B.4 R	RM Requirements Exceptions	1487
B.4.1	General	1487
B.4.2	Receiver sensitivity relaxation for UE supporting CA	1487
B.4.3	Receiver sensitivity relaxation for UE configured with CA	1488
B.4.3.1	Inter-band carrier aggregation	1488
B.4.3.2	Intra-band non-contiguous carrier aggregation	1488
B.4.3.3	Inter-band carrier aggregation with operating bands without uplink band	1488
B.5 C	onditions for Measurement Performance Requirements for ProSe UE in Any Cell Selection	
St	tate State	1488
B.5.1	Conditions for S-RSRP Accuracy Requirements	
B.5.2	Conditions for Relative S-RSRP Accuracy Requirements	
B.5.3	Conditions for Selection/Seselection to Intra-frequency SyncRef UE	
Annex (C (informative): Change history:	1491
mistory.		1910

Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

The contents of the present document are subject to continuing work within the TSG and may change following formal TSG approval. Should the TSG modify the contents of the present document, it will be re-released by the TSG with an identifying change of release date and an increase in version number as follows:

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1 Scope

The present document specifies requirements for support of Radio Resource Management for the FDD and TDD modes of Evolved UTRA. These requirements include requirements on measurements in UTRAN and the UE as well as requirements on node dynamical behaviour and interaction, in terms of delay and response characteristics.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.

Modulation"

• For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1]	3GPP TS 36.304: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) procedures in idle mode"
[2]	3GPP TS 36.331: "Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC) protocol specification".
[3]	3GPP TS 36.213: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures"
[4]	3GPP TS 36.214: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer; Measurements"
[5]	3GPP TS 36.101: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception"
[6]	3GPP TS 25.302: "Services provided by the Physical Layer".
[7]	3GPP TS 25.331: "RRC Protocol Specification".
[8]	3GPP TS 45.008: "Radio subsystem link control".
[9]	3GPP TS 45.005: "Radio transmission and reception".
[10]	3GPP TS 45.010: "Radio subsystem synchronization".
[11]	3GPP2 C.S0024-B: "cdma2000 High Rate Packet Data Air Interface Specification".
[12]	3GPP2 C.S0002-D: "Physical Layer Standard for cdma2000 Spread Spectrum Systems - Release A".
[13]	3GPP2 C.S0033-B: "Recommended Minimum Performance Standards for cdma2000 High Rate Packet Data Access Terminal".
[14]	3GPP2 C.S0011-C: "Recommended Minimum Performance Standards for cdma2000 Spread Spectrum Mobile Stations".
[15]	3GPP2 C.S0005-D: Upper Layer (Layer 3) Signaling Specification for cdma2000 Spread Spectrum Systems
[16]	3GPP TS 36.211: "Evolved Universal Terrestrial Radio Access (E-UTRA); Physical Channels and

[17]	3GPP TS 36.321: "Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification".
[18]	3GPP TS 25.133: "Requirements for Support of Radio Resource Management (FDD)".
[19]	3GPP TS 25.123: "Requirements for Support of Radio Resource Management (TDD)".
[20]	3GPP TS 25.214: "Physical layer procedures (FDD)".
[21]	3GPP TS 36. 212 "Evolved Universal Terrestrial Radio Access (E-UTRA); Multiplexing and channel coding".
[22]	3GPP TS 36.302: "Evolved Universal Terrestrial Radio Access (E-UTRA); Services provided by the physical layer".
[23]	3GPP TS 36.521-3: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification; Radio transmission and reception; Part 3: Radio Resource Management conformance testing".
[24]	3GPP TS 36.355: "Evolved Universal Terrestrial Radio Access (E-UTRA); LTE Positioning Protocol (LPP)".
[25]	3GPP TS 36.300: "Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2"
[26]	3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
[27]	3GPP TS 37.320: "Universal Terrestrial Radio Access (UTRA) and Evolved Universal Terrestrial Radio Access (E-UTRA); Radio measurement collection for Minimization of Drive Tests (MDT); Overall description; Stage 2"
[28]	3GPP TS 36.423: "Evolved Universal Terrestrial Radio Access Network (E-UTRAN); X2 Application Protocol (X2AP)".
[29]	3GPP TS 25.101: "UE Radio transmission and reception (FDD)".
[30]	3GPP TS 36.104: "Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception".
[31]	3GPP TS 36.306: "Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio access capabilities".
[32]	IEEE Standard 802.11: Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications.
[33]	3GPP TS 23.303: "Technical Specification Group Services and System Aspects; Proximity-based services (ProSe); Stage 2".
[34]	3GPP TS 24.008: "Mobile radio interface Layer 3 specification; Core network protocols; Stage 3".

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in TR 21.905 [26] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in TR 21.905 [26].

Any Cell Selection state: as defined in TS 36.304 [1]

Asynchronous Dual Connectivity: As defined in TS 36.300 [25].

Carrier aggregation: aggregation of two or more component carriers in order to support wider transmission bandwidths TS 36.104 [30].

Dual Connectivity: As defined in TS 36.300 [25].

Extended DRX: extended DRX cycles are as specified in TS 24.008 [34].

High operating band: an operating band with a higher downlink frequency with respect to another, low, operating band.

Inter-band carrier aggregation: carrier aggregation of component carriers in different operating bands TS 36.104 [30].

Intra-band contiguous carrier aggregation: contiguous carriers aggregated in the same operating band TS 36.104 [30].

Intra-band non-contiguous carrier aggregation: non-contiguous carriers aggregated in the same operating band TS 36.104 [30].

IDC autonomous denial subframes: The maximum number of uplink subframes in which the UE is allowed not to transmit E-UTRAN signals when configured with IDC autonomous denial (TS 36.331 [2]).

IDC autonomous denial validity: It is the period over which the autonomous denial subframes are counted (TS 36.331 [2]).

IDC solution: This refers to DRX or IDC autonomous denial configured by eNodeB in response to receiving InDeviceCoexIndication from the UE (TS 36.331 [2]).

Low operating band: an operating band with a lower downlink frequency with respect to another, high, operating band.

Master Cell Group: As defined in TS 36.300 [25].

Master eNB: As defined in TS 36.300 [25].MBSFN ABS: ABS configured in MBSFN-configurable subframe.

Non-MBSFN ABS: ABS configured in any downlink subframe.

Normal Performance Group: For UE which supports Increased UE carrier monitoring UTRA or E-UTRA the group of inter-frequency carriers or inter-RAT carriers is divided into two groups. The group which has a better delay performance compared to the other group is referred to as the normal performance group

Primary Cell: As defined in TS 36.331 [2].

ProSe Direct Communication: As defined in TS 23.303 [33]

ProSe Direct Discovery: As defined in TS 23.303 [33]

Primary SCell: As defined in TS 36.300 [25].

Primary Secondary Timing Advance Group: Timing Advance Group containing the PSCell.

Primary Timing Advance Group: Timing Advance Group containing the PCell.

Reduced Performance Group: For UE which supports Increased UE carrier monitoring UTRA or E-UTRA the group of inter-frequency carriers or inter-RAT carriers is divided into two groups. The group which has worse delay performance compared to the other group is refered to as the reduced performance group

Secondary Cell: As defined in TS 36.331 [2].

Secondary eNB: As defined in TS 36.300 [25].

Serving Cell: As defined in TS 36.331 [2].

Secondary Cell Group: As defined in TS 36.300 [25].

Secondary Timing Advance Group: As defined in TS 36.331 [2].

Synchronous Dual Connectivity: As defined in TS 36.300 [25].

TDD-FDD carrier aggregation: Carrier aggregation of component carriers in E-UTRA TDD and E-UTRA FDD operating bands TS 36.104 [30].

Timing Advance Group: As defined in TS 36.331 [2].

UE category 0 applicability: In this version of this specification the requirements for a UE category 0 are derived assuming UE category 0 [31] and a single antenna receiver.

x_RA: x-to-RS EPRE ratio for the channel or physical signal x in all transmitted OFDM symbols not containing RS.

x_RB: x-to-RS EPRE ratio for the channel or physical signal x in all transmitted OFDM symbols containing RS.

3.2 Symbols

For the purposes of the present document, the following symbols apply:

[...] Values included in square bracket must be considered for further studies, because it means that a

decision about that value was not taken.

BW_{Channel} Channel bandwidth, defined in TS 36.101 subclause 3.2

CPICH_Ec Average energy per PN chip for the CPICH

CPICH_Ec/Io The ratio of the received energy per PN chip for the CPICH to the total received power spectral

density at the UE antenna connector.

Ec Average energy per PN chip.

Ês Received energy per RE (power normalized to the subcarrier spacing) during the useful part of the

symbol, i.e. excluding the cyclic prefix, at the UE antenna connector

Io The total received power density, including signal and interference, as measured at the UE antenna

connector.

Ioc The power spectral density (integrated in a noise bandwidth equal to the chip rate and normalized

to the chip rate) of a band limited noise source (simulating interference from cells, which are not

defined in a test procedure) as measured at the UE antenna connector.

In the received power spectral density of the total noise and interference for a certain RE (power

integrated over the RE and normalized to the subcarrier spacing) as measured at the UE antenna

connector

 N_{oc} The power spectral density of a white noise source (average power per RE normalised to the

subcarrier spacing), simulating interference from cells that are not defined in a test procedure, as

measured at the UE antenna connector

 N_{PRS} Number of consecutive downlink positioning subframes as defined in clause 6.10.4.3 in TS 36.211

 n_{PRB} Physical Resource Block number as defined in clause 3.1 in TS 36.211.

 $N_{\rm TA}$ Timing offset between uplink and downlink radio frames at the UE, as defined in clause 3.1 in TS

36.211.

 $N_{\rm TA~offset}$ Fixed timing advance offset, as defined in clause 3.1 in TS 36.211.

 P_{CMAX} Configured UE transmitted power as defined in clause 6.2.5 in TS 36.101.

 P_{CMAX} Configured UE transmitted power on a serving cell c as defined in clause 6.2.5A in TS 36.101.

PRP Received (linear) average power of the resource elements that carry E-UTRA PRS, measured at

the UE antenna connector.

S Cell Selection Criterion defined in TS 36.304, subclause 5.2.3.2 for E-UTRAN

SCH_Ec/Ior The ratio of the transmit energy per PN chip of the SCH to the total transmit power spectral

density at the UTRA Node B antenna connector

SCH_RP Received (linear) average power of the resource elements that carry E-UTRA synchronisation

signal, measured at the UE antenna connector

Srxlev Cell selection RX level, defined in TS 36.304, subclause 5.2.3.2 Squal Cell selection quality, defined in TS 36.304, subclause 5.2.3.2

Sintersearch Defined in TS 25.304, subclause 5.2.6.1.5

Sintrasearch Defined in TS 25.304, subclause 5.2.6.1.5 for UTRAN and in TS 36.304, subclause 5.2.4.7 for E-

UTRAN

 $T_{\rm PRS}$ Cell-specific positioning subframe configuration period as defined in clause 6.10.4.3 in TS 36.211

T_{RE-ESTABLISH-REO} The RRC Re-establishment delay requirement, the time between the moment when erroneous

CRCs are applied, to when the UE starts to send preambles on the PRACH.

 $\begin{array}{lll} Treselection & Defined in TS \ 25.304, subclause \ 5.2.6.1.5 \\ Treselection_{RAT} & Defined in TS \ 36.304 \ , subclause \ 5.2.4.7 \\ Treselection_{UTRA} & Defined in TS \ 36.304 \ , subclause \ 5.2.4.7 \\ Treselection_{UTRA} & Defined in TS \ 36.304 \ , subclause \ 5.2.4.7 \\ Treselection_{GERA} & Defined in TS \ 36.304 \ , subclause \ 5.2.4.7 \\ T_S & Basic time unit, defined in TS \ 36.211, clause \ 4 \\ \end{array}$

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in TR 21.905 [26] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in TR 21.905 [26].

1x RTT CDMA2000 1x Radio Transmission Technology

ABS Almost Blank Subframe ARQ Automatic Repeat Request

AP Access Point

AWGN Additive White Gaussian Noise BCCH Broadcast Control Channel

BCH Broadcast Channel
CA Carrier Aggregation
CC Component Carrier

CCCH SDU Common Control Channel SDU

CGI Cell Global Identifier CPICH Common Pilot Channel

CPICH Ec/No CPICH Received energy per chip divided by the power density in the band

CRS Cell-specific Reference Signals

C-RNTI Cell RNTI

CSI Channel-State Information
CSI-RS CSI Reference Signal
DC Dual Connectivity
DCCH Dedicated Control Channel

DL Downlink

DMTC Discovery signal Measurement Timing Configuration

DRX Discontinuous Reception
DTCH Dedicated Traffic Channel
DUT Device Under Test

E-CID Enhanced Cell-ID (positioning method)

ECGI Evolved CGI
eDRX Extended DRX
eNB E-UTRAN NodeB

E-SMLC Enhanced Serving Mobile Location Centre

E-UTRA Evolved UTRA E-UTRAN Evolved UTRAN

FDD Frequency Division Duplex

GERAN GSM EDGE Radio Access Network
GSM Global System for Mobile communication
HARQ Hybrid Automatic Repeat Request

HD-FDD Half-Duplex FDD

HO Handover

HRPD High Rate Packet Data IDC In-Device Coexistence

IEEE Institute of Electrical and Electronics Engineers

LPP LTE Positioning Protocol
LWA LTE-WLAN Aggregation
MAC Medium Access Control
MCG Master Cell Group
MeNB Master eNB

MBSFN Multimedia Broadcast multicast service Single Frequency Network

MBSFN ABS MBSFN Almost Blank Subframe MDT Minimization of Drive Tests

MGRP Measurement Gap Repetition Period

MIB Master Information Block

OCNG OFDMA Channel Noise Generator

OFDM Orthogonal Frequency Division Multiplexing
OFDMA Orthogonal Frequency Division Multiple Access

OTDOA Observed Time Difference of Arrival

PBCH Physical Broadcast Channel

P-CCPCH Primary Common Control Physical Channel

PCell Primary Cell

PCFICH Physical Control Format Indicator CHannel
PDCCH Physical Downlink Control CHannel
PDSCH Physical Downlink Shared CHannel
PHICH Physical Hybrid-ARQ Indicator CHannel

PLMN Public Land Mobile Network
PMCH Physical Multicast Channel
PRACH Physical Random Access CHannel

ProSe Proximity-based Services
PRS Positioning Reference Signal

PSBCH Physical Sidelink Broadcast CHannel PSCCH Physical Sidelink Control Channel

PSCell Primary SCell

PSS Primary Synchronization Signal PSSCH Physical Sidelink Shared CHannel

psTAG Primary Secondary Timing Advance Group

pTAG Primary Timing Advance Group PUCCH Physical Uplink Control CHannel PUSCH Physical Uplink Shared Channel

RS-SINR Reference Signal Signal to Noise and Interference RatioRSCP Received Signal Code Power

RSRP Reference Signal Received Power
RSRQ Reference Signal Received Quality
RSSI Received Signal Strength Indicator
RSTD Reference Signal Time Difference
QAM Quadrature Amplitude Modulation

RACH Random Access Channel
RAT Radio Access Technology
RNC Radio Network Controller

RNTI Radio Network Temporary Identifier

RRC Radio Resource Control
RRM Radio Resource Management
SCE Small Cell Enhancement
SCH Synchronization Channel

SCell Secondary Cell

SCG Secondary Cell GroupSDU Service Data Unit

SeNB Secondary eNB

SFN System Frame Number
SI System Information
SIB System Information Block

SLSS SideLink Synchronization Sequence

SON Self Optimized Network
SRS Sounding Reference Signal
SSS Secondary Synchronization Signal
SSTD SFN and subframe time difference
sTAG Secondary Timing Advance Group

TAG Timing Advance Group
TDD Time Division Duplex
TP Transmission Point
TTI Transmission Time Interval

UE User Equipment

UL Uplink

UMTS Universal Mobile Telecommunication System

UTRA Universal Terrestrial Radio Access

UTRAN Universal Terrestrial Radio Access Network

WLAN Wireless Local Area Network WB-RSRQ Wide Bandwith RSRQ

3.4 Test tolerances

The requirements given in the present document make no allowance for measurement uncertainty. The test specification 36.521-3 [23] defines the test tolerances. These test tolerances are individually calculated for each test. The test tolerances are then added to the limits in this specification to create test limits. The measurement results are compared against the test limits as defined by the shared risk principle.

Shared Risk is defined in [ETR 273 Part 1 sub-part 2 clause 6.5].

3.5 Additional notation

3.5.1 Groups of bands

The intention with the band grouping below is to increase the readability of the specification.

Table 3.5.1-1: E-UTRA band groups

Group		E-UTRA FDD	E-UTRA TDD E-UTRA Frame Str		Structure 3	
	Band group notation	Operating bands	Band group notation	Operating bands	Band group notation	Operating bands
А	FDD_A	1, 4, 6, 10, 11, 18, 19, 21, 23, 24, 32 Note 4, 67	TDD_A	33, 34, 35, 36, 37, 38, 39, 40, 45	FS3_A	-
В	FDD_B	65, 66 Note 5	TDD_B	-	FS3_B	-
С	FDD_C	9, 30	TDD_C	42, 43	FS3_C	-
D	FDD_D	28	TDD_D	-	FS3_D	-
Е	FDD_E	2, 5, 7, 27	TDD_E	41, 44	FS3_E	-
F	FDD_F	26 Note 3	TDD_F	-	FS3_F	-
G	FDD_G	3, 8, 12, 13, 14, 17, 20, 22, 29 Note 2	TDD_G	-	FS3_G	46
Н	FDD_H	25	TDD_H	-	FS3_H	-
I	FDD_I	-	TDD_I	-	FS3_I	-
J	FDD_J	-	TDD_J	-	FS3_J	-
K	FDD_K	-	TDD_K	-	FS3_K	-
L	FDD_L	-	TDD_L	-	FS3_L	-
М	FDD_M	-	TDD_M	-	FS3_M	-
N	FDD_N	31	TDD_N	-	FS3_N	-

NOTE 1: The bands within the same group have the same lo conditions in a corresponding requirement in this specification.

3.6 General

3.6.1 Applicability of requirements in this specification version

- The requirements for TDD-FDD carrier aggregation are specified for two downlink and one uplink component carriers. The requirements are specified for both cases when the PCell belongs to TDD or FDD.

NOTE 2: Band 29 is used only for E-UTRA carrier aggregation with other E-UTRA bands.

NOTE 3: The minimum lo condition for Band 26 is reduced by 0.5 dB when the carrier frequency of the assigned E-UTRA channel bandwidth is within 865-894 MHz.

NOTE 4: Band 32 is used only for E-UTRA carrier aggregation with other E-UTRA bands.

NOTE 5: The 2180 - 2200 MHz part of Band 66 is used only for E-UTRA carrier aggregation with other E-UTRA bands.

NOTE 6: Band 67 is used only for E-UTRA carrier aggregation with other E-UTRA bands.

- All the requirements for intra-band contiguous and non-contiguous CA apply under the assumption of the same uplink-downlink and special subframe configurations [16] in the PCell and SCell.
- All the requirements for inter-band CA apply for the same uplink-downlink and special subframe configurations [16] in the PCell and SCell. Different uplink-downlink and special subframe configurations [16] in the PCell and SCell are supported for inter-band CA for UEs which:
 - do not support simultaneous reception and transmission for inter-band TDD CA specified in TS 36.331 [2], and
 - are compliant to the requirements specified in TS 36.101 for inter-band CA with uplink in one E-UTRA band and without simultaneous Rx/Tx.
- All the inter-frequency requirements and requirements for measurements on deactivated carrier apply for the same uplink-downlink and special subframe configurations [16] in the PCell and SCell. Different uplink-downlink and special subframe configurations [16] in the PCell and SCell are supported for inter-frequency for UEs which:
 - do not support simultaneous reception and transmission for inter-band TDD CA specified in TS 36.331 [2], and are compliant to the requirements specified in TS 36.101 for inter-band CA with uplink in one E-UTRA band and without simultaneous Rx/Tx.
- Requirements for E-UTRA carrier aggregation are applicable for the CA capable UE which has been configured with at least one downlink SCell, but:
 - up to four downlink CCs and up to two uplink CCs for intra-band contiguous carrier aggregation, or
 - up to four downlink CCs and one uplink CCs for inter-band carrier aggregation, or
 - up to two downlink/uplink CCs intra-band contiguous and one downlink/uplink inter-band carrier aggregation, or
 - up to two downlink CCs intra-band contiguous and one downlink inter-band and up to two uplink CCs for inter-band carrier aggregation, or
 - up to two downlink CCs intra-band non-contiguous and one downlink inter-band and up to two uplink CCs for inter-band carrier aggregation, or
 - up to three downlink CCs intra-band contiguous and one downlink intra-band non-contiguous and up to two uplink CCs intra-band contiguous for carrier aggregation, or
 - two sub-blocks intra-band non-contiguous with two downlink CCs intra-band contiguous per sub-blocks and up to two uplink CCs intra-band contiguous for carrier aggregation, or
 - two downlink CCs intra-band contiguous and three down link CCs inter-band and one uplink CC for carrier aggregation, or
 - two downlink CCs intra-band contiguous and two downlink CCs intra-band contiguous and one downlink CC inter-band and one uplink CC for carrier aggregation, or
 - up to two downlink CCs and up to two uplink CCs for intra-band non-contiguous carrier aggregation, or
 - up to two downlink CCs and up to two uplink CCs for inter-band carrier aggregation, or
 - up to two downlink CCs intra-band contiguous and one downlink inter-band and one uplink CC for carrier aggregation, or
 - up to two downlink CCs intra-band non-contiguous and one downlink inter-band and one uplink CC for carrier aggregation, or
 - up to two downlink CCs and one uplink CC for intra-band non-contiguous carrier aggregation.
- Requirements for E-UTRA carrier aggregation for discovery signal measurements are applicable for CA capable UE which has been configured with at least one downlink SCell, but:
 - up to four downlink CCs and up to two uplink CCs for intra-band contiguous carrier aggregation, or
 - up to four downlink CCs and up to one uplink CCs for inter-band carrier aggregation, or

- up to two downlink/uplink CCs intra-band contiguous and one downlink/uplink inter-band carrier aggregation, or
- up to two downlink CCs intra-band contiguous and one downlink inter-band and up to two uplink CCs for inter-band carrier aggregation, or
- up to two downlink CCs intra-band non-contiguous and one downlink inter-band and up to two uplink CCs for inter-band carrier aggregation, or
- up to three downlink CCs intra-band contiguous and one downlink intra-band non-contiguous and up to two uplink CCs intra-band contiguous for carrier aggregation, or
- two sub-blocks intra-band non-contiguous with two downlink CCs intra-band contiguous per sub-blocks and up to two uplink CCs intra-band contiguous for carrier aggregation, or
- two downlink CCs intra-band contiguous and three down link CCs inter-band and one uplink CC for carrier aggregation, or
- two downlink CCs intra-band contiguous and two downlink CCs intra-band contiguous and one downlink CC inter-band and one uplink CC for carrier aggregation, or
- up to two downlink CCs and up to two uplink CCs for intra-band non-contiguous carrier aggregation, or
- up to two downlink CCs and up to two uplink CCs for inter-band carrier aggregation, or
- up to two downlink CCs intra-band contiguous and one downlink inter-band and one uplink CC for carrier aggregation, or
- up to two downlink CCs intra-band non-contiguous and one downlink inter-band and one uplink CC for carrier aggregation, or
- up to two downlink CCs and one uplink CC for intra-band non-contiguous carrier aggregation.
- Requirements for E-UTRA carrier aggregation, where the PCell is FDD PCell or TDD PCell and the downlink SCell(s) follow the frame structure type 3 [16], are applicable for the CA capable UE, which is supporting band combinations according to 36.101 [5] and which has been configured with at least one downlink SCell but:
 - up to five downlink CCs and one uplink CCs for inter-band carrier aggregation.
- The requirements with eDRX apply only to non-CA requirements.

4 E-UTRAN RRC_IDLE state mobility

4.1 Cell Selection

After a UE has switched on and a PLMN has been selected, the Cell selection process takes place, as described in TS36.304. This process allows the UE to select a suitable cell where to camp on in order to access available services. In this process the UE can use stored information (*Stored information cell selection*) or not (*Initial cell selection*).

4.2 Cell Re-selection

4.2.1 Introduction

The cell reselection procedure allows the UE to select a more suitable cell and camp on it.

When the UE is in either *Camped Normally* state or *Camped on Any Cell* state on a cell, the UE shall attempt to detect, synchronise, and monitor intra-frequency, inter-frequency and inter-RAT cells indicated by the serving cell. For intra-frequency and inter-frequency cells the serving cell may not provide explicit neighbour list but carrier frequency information and bandwidth information only. UE measurement activity is also controlled by measurement rules defined in TS36.304, allowing the UE to limit its measurement activity.

4.2.2 Requirements

The UE shall search every layer of higher priority at least every $T_{higher_priority_search} = (60 * N_{layers})$ seconds, where N_{layers} is the total number of configured higher priority E-UTRA, UTRA FDD, UTRA TDD, CDMA2000 1x and HRPD carrier frequencies and is additionally increased by one if one or more groups of GSM frequencies is configured as a higher priority.

In the requirements of Section 4.2.2 for the UE capable of CA, the applicable exceptions for side conditions are specified in Annex B, Section B.4.2.

For a UE which supports increased carrier monitoring E-UTRA or increased carrier monitoring UTRA, the reselection performance for different carriers may be configured by higher layers to be either normal or reduced. The following definitions are used in the requirements:

K_{carrier}: Total number of interfrequency carriers in the neighbour cell list

 $K_{carrier,normal} = K_{carrier} - K_{carrier,reduced}$: Number of interfrequency carriers to be monitored in the normal performance group

 $K_{carrier,reduced}$: Number of interfrequency carriers to be monitored in the reduced performance group

 $N_{UTRA\ carrier}$: Total number of configured UTRA FDD carriers in the neighbour cell list

 $N_{UTRA_carrier,normal} = N_{UTRA_carrier} - N_{UTRA_carrier,reduced}$: Number of UTRA FDD carriers to be monitored in the normal performance group

N_{UTRA} carrier,reduced: Number of UTRA FDD carriers to be monitored in the reduced performance group

N_{IUTRA carrier TDD}: Total number of configured UTRA TDD carriers in the neighbour cell list

 $N_{UTRA_carrier_TDD,normal} = N_{UTRA_carrier_TDD} - N_{UTRA_carrier_TDD,reduced}$: Number of UTRA TDD carriers to be monitored in the normal performance grop

 $N_{UTRA_carrier_TDD,reduced}$: Number of UTRA TDD carriers to be monitored in the reduced performance group

The minimum performance requirements for a UE which supports Increased UE carrier monitoring E-UTRA [2, 31] are calculated as defined in section 4.2.2.4 provided that $K_{carrier,normal} \le 3$ and the minimum performance requirements for a UE which supports Increased UE carrier monitoring UTRA [2, 31] are calculated as defined in section 4.2.2.5 provided that $N_{UTRA\ carrier\ normal} \le 3$ and $N_{UTRA\ carrier\ normal} \le 3$. In case the limits for the number of normal performance carriers is

exceeded considering the broadcast neighbour cell list and the bands supported by the UE, the UE which supports Increased UE carrier monitoring E-UTRA shall measure at least 3 interfrequency carriers with normal performance and the UE which supports Increased UE carrier monitoring UTRA shall measure at least 3 UTRA carriers with normal performance. Additionally, reduced performance requirements shall be met for carriers for which the *Reduced measurement performance* IE is indicated, up to the UE measurement capability in section 4.2.2.9a. The minimum performance requirements for a UE which does not support Increased UE carrier monitoring E-UTRA [2,31] are calculated assuming all E-UTRA carriers required to be monitored for such UE, are having normal performance and are in normal performance group, i.e. $K_{carrier,normal} = K_{carrier}$ and $K_{carrier,reduced} = 0$. The minimum performance requirements for a UE which does not support Increased UE carrier monitoring UTRA [2,31] are calculated assuming all UTRA carriers required to be monitored for such UE, are having normal performance and are in normal performance group, i.e. $N_{UTRA_carrier,normal} = N_{UTRA_carrier,normal} = N_{UTRA_carrier,reduced} = 0$ and $N_{UTRA_carrier,reduced} = 0$ and $N_{UTRA_carrier,reduced} = 0$. No reduced performance carrier requirement applies to a UE not supporting Increased UE carrier monitoring E-UTRA or UTRA [2, 31]. Capabilities for number of carriers to monitor for a UE which does not support Increased carrier monitoring E-UTRA or Increased carrier monitoring UTRA are specified in section 4.2.2.9

4.2.2.1 Measurement and evaluation of serving cell

The UE shall measure the RSRP and RSRQ level of the serving cell and evaluate the cell selection criterion S defined in [1] for the serving cell at least every DRX cycle.

The UE shall filter the RSRP and RSRQ measurements of the serving cell using at least 2 measurements. Within the set of measurements used for the filtering, at least two measurements shall be spaced by, at least DRX cycle/2.

If the UE has evaluated in N_{serv} consecutive DRX cycles that the serving cell does not fulfil the cell selection criterion S, the UE shall initiate the measurements of all neighbour cells indicated by the serving cell, regardless of the measurement rules currently limiting UE measurement activities.

If the UE in RRC_IDLE has not found any new suitable cell based on searches and measurements using the intra-frequency, inter-frequency and inter-RAT information indicated in the system information for 10 s, the UE shall initiate cell selection procedures for the selected PLMN as defined in [1].

Table 4.2.2.1-1: N_{serv}

4.2.2.2 Void

4.2.2.3 Measurements of intra-frequency E-UTRAN cells

The UE shall be able to identify new intra-frequency cells and perform RSRP and RSRQ measurements of identified intra-frequency cells without an explicit intra-frequency neighbour list containing physical layer cell identities.

The UE shall be able to evaluate whether a newly detectable intra-frequency cell meets the reselection criteria defined in TS36.304 within $T_{\text{detect}, \text{EUTRAN_Intra}}$ when that Treselection= 0. An intra frequency cell is considered to be detectable according to RSRP, RSRP £s/Iot, SCH_RP and SCH £s/Iot defined in Annex B.1.1 for a corresponding Band.

The UE shall measure RSRP and RSRQ at least every $T_{measure,EUTRAN_Intra}$ (see table 4.2.2.3-1) for intra-frequency cells that are identified and measured according to the measurement rules.

The UE shall filter RSRP and RSRQ measurements of each measured intra-frequency cell using at least 2 measurements. Within the set of measurements used for the filtering, at least two measurements shall be spaced by at least $T_{\text{measure,EUTRAN_Intra}}/2$

The UE shall not consider a E-UTRA neighbour cell in cell reselection, if it is indicated as not allowed in the measurement control system information of the serving cell.

For an intra-frequency cell that has been already detected, but that has not been reselected to, the filtering shall be such that the UE shall be capable of evaluating that the intra-frequency cell has met reselection criterion defined [1] within $T_{\text{evaluate,E-UTRAN_intra}}$ when $T_{\text{reselection}} = 0$ as specified in table 4.2.2.3-1 provided that the cell is at least 3dB better ranked. When evaluating cells for reselection, the side conditions for RSRP and SCH apply to both serving and non-serving intra-frequency cells.

If $T_{reselection}$ timer has a non zero value and the intra-frequency cell is better ranked than the serving cell, the UE shall evaluate this intra-frequency cell for the $T_{reselection}$ time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

DRX cycle length [s]	T _{detect,EUTRAN_Intra} [s] (number of DRX cycles)	T _{measure,EUTRAN_Intra} [s] (number of DRX cycles)	T _{evaluate,E-UTRAN_intra} [s] (number of DRX cycles)
0.32	11.52 (36)	1.28 (4)	5.12 (16)
0.64	17.92 (28)	1.28 (2)	5.12 (8)
1.28	32(25)	1.28 (1)	6.4 (5)
2.56	58.88 (23)	2.56 (1)	7.68 (3)

Table 4.2.2.3-1: T_{detect,EUTRAN Intra}, T_{measure,EUTRAN Intra} and T_{evaluate, E-UTRAN intra}

4.2.2.4 Measurements of inter-frequency E-UTRAN cells

The UE shall be able to identify new inter-frequency cells and perform RSRP or RSRQ measurements of identified inter-frequency cells if carrier frequency information is provided by the serving cell, even if no explicit neighbour list with physical layer cell identities is provided.

If $Srxlev > S_{nonIntraSearchP}$ and $Squal > S_{nonIntraSearchQ}$ then the UE shall search for inter-frequency layers of higher priority at least every $T_{higher\ priority\ search}$ where $T_{higher\ priority\ search}$ is described in clause 4.2.2.

If $Srxlev \leq S_{nonIntraSearchP}$ or $Squal \leq S_{nonIntraSearchQ}$ then the UE shall search for and measure inter-frequency layers of higher, equal or lower priority in preparation for possible reselection. In this scenario, the minimum rate at which the UE is required to search for and measure higher priority layers shall be the same as that defined below.

The UE shall be able to evaluate whether a newly detectable inter-frequency cell in normal performance group meets the reselection criteria defined in TS36.304 within $K_{carrier,normal} * T_{detect,EUTRAN_Inter}$, and able to evaluate whether a newly detectable inter-frequency cell in reduced performance group meets the reselection criteria defined in TS36.304 within 6 * $K_{carrier,reduced} * T_{detect,EUTRAN_Inter}$ if at least carrier frequency information is provided for inter-frequency neighbour cells by the serving cells when $T_{reselection} = 0$ provided that the reselection criteria is met by a margin of at least 5dB for reselections based on ranking or 6dB for RSRP reselections based on absolute priorities or 4dB for RSRQ reselections based on absolute priorities. An inter-frequency cell is considered to be detectable according to RSRP, RSRP £s/Iot, SCH RP and SCH £s/Iot defined in Annex B.1.2 for a corresponding Band.

When higher priority cells are found by the higher priority search, they shall be measured at least every $T_{\text{measure},E-}$ $_{\text{UTRAN_Inter}}$. If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection. However, the minimum measurement filtering requirements specified later in this clause shall still be met by the UE before it makes any determination that it may stop measuring the cell. If the UE detects on a E-UTRA carrier a cell whose physical identity is indicated as not allowed for that carrier in the measurement control system information of the serving cell, the UE is not required to perform measurements on that cell.

The UE shall measure RSRP or RSRQ at least every $K_{carrier,normal} * T_{measure,EUTRAN_Inter}$ (see table 4.2.2.4-1) for identified lower or equal priority inter-frequency cells in normal performance group, and at least every $6 * K_{carrier,reduced} * T_{measure,EUTRAN_Inter}$ for identified lower or equal priority inter-frequency cells in reduced performance group. If the UE detects on a E-UTRA carrier a cell whose physical identity is indicated as not allowed for that carrier in the measurement control system information of the serving cell, the UE is not required to perform measurements on that cell.

The UE shall filter RSRP or RSRQ measurements of each measured higher, lower and equal priority inter-frequency cell using at least 2 measurements. Within the set of measurements used for the filtering, at least two measurements shall be spaced by at least $T_{measure,EUTRAN_Inter}/2$.

The UE shall not consider a E-UTRA neighbour cell in cell reselection, if it is indicated as not allowed in the measurement control system information of the serving cell.

For an inter-frequency cell that has been already detected, but that has not been reselected to, the filtering shall be such that the UE shall be capable of evaluating that the inter-frequency cell in normal performance group has met reselection criterion defined TS 36.304 within $K_{carrier,normal}$ * $T_{evaluate,E-UTRAN_Inter}$, and capable of evaluating that the inter-frequency cell in reduced performance group has met reselection criterion defined TS 36.304 within 6 * $K_{carrier,reduced}$ * $T_{evaluate,E-UTRAN_Inter}$, when $T_{reselection} = 0$ as specified in table 4.2.2.4-1 provided that the reselection criteria is met by a margin of at least 5dB for reselections based on ranking or 6dB for RSRP reselections based on absolute priorities or 4dB for RSRQ reselections based on absolute priorities. When evaluating cells for reselection, the side conditions for RSRP and SCH apply to both serving and inter-frequency cells.

If $T_{reselection}$ timer has a non zero value and the inter-frequency cell is better ranked than the serving cell, the UE shall evaluate this inter-frequency cell for the $T_{reselection}$ time. If this cell remains better ranked within this duration, then the UE shall reselect that cell.

DRX cycle length [s]	T _{detect,EUTRAN_Inter} [s] (number of DRX cycles)	T _{measure,EUTRAN_Inter} [s] (number of DRX cycles)	T _{evaluate,E} - UTRAN_Inter [s] (number of DRX cycles)
0.32	11.52 (36)	1.28 (4)	5.12 (16)
0.64	17.92 (28)	1.28 (2)	5.12 (8)
1.28	32(25)	1.28 (1)	6.4 (5)
2.56	58.88 (23)	2.56 (1)	7.68 (3)

Table 4.2.2.4-1: T_{detect,EUTRAN_Inter}, T_{measure,EUTRAN_Inter} and T_{evaluate,E-UTRAN_Inter}

For higher priority cells, a UE may optionally use a shorter value for $T_{\text{measureE-UTRA_Inter}}$, which shall not be less than Max(0.64 s, one DRX cycle).

4.2.2.5 Measurements of inter-RAT cells

If $Srxlev > S_{nonIntraSearchP}$ and $Squal > S_{nonIntraSearchQ}$ then the UE shall search for inter-RAT layers of higher priority at least every $T_{higher_priority_search}$ where $T_{higher_priority_search}$ is described in clause 4.2.2

If $Srxlev \leq S_{nonIntraSearchP}$ or $Squal \leq S_{nonIntraSearchQ}$ then the UE shall search for and measure inter-RAT layers of higher, lower priority in preparation for possible reselection. In this scenario, the minimum rate at which the UE is required to search for and measure higher priority inter-RAT layers shall be the same as that defined below for lower priority RATs.

4.2.2.5.1 Measurements of UTRAN FDD cells

When the measurement rules indicate that UTRA FDD cells are to be measured, the UE shall measure CPICH Ec/Io and CPICH RSCP of detected UTRA FDD cells in the neighbour frequency list at the minimum measurement rate specified in this section. The UE shall filter CPICH Ec/Io and CPICH RSCP measurements of each measured UTRA FDD cell using at least 2 measurements. Within the set of measurements used for the filtering, at least two measurements shall be spaced by at least half the minimum specified measurement period.

The UE shall evaluate whether newly detectable UTRA FDD cells in normal performance group have met the reselection criteria in TS 36.304 within time ($N_{UTRA_carrier,normal}$) * $T_{detectUTRA_FDD}$, and evaluate whether newly detectable UTRA FDD cells in reduced performance group have met the reselection criteria in TS 36.304 within time 6 * $N_{UTRA_carrier,reduced}$ * $T_{detectUTRA_FDD}$ when $Srxlev \leq S_{nonIntraSearchP}$ or $Squal \leq S_{nonIntraSearchQ}$ when $T_{detectUTRA_FDD}$ when $T_{detectUTRA_$

Cells which have been detected shall be measured at least every $(N_{UTRA_carrier,normal}) * T_{measureUTRA_FDD}$ for the cells in normal performance group, and at least every $6 * N_{UTRA_carrier,reduced} * T_{measureUTRA_FDD}$ for the cells in reduced performance group when $Srxlev \leq S_{nonIntraSearchP}$ or $Squal \leq S_{nonIntraSearchP}$.

When higher priority UTRA FDD cells are found by the higher priority search, they shall be measured at least every $T_{measure,UTRA\ FDD}$. If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred

then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection. However, the minimum measurement filtering requirements specified later in this clause shall still be met by the UE before it makes any determination that it may stop measuring the cell.

For a cell that has been already detected, but that has not been reselected to, the filtering shall be such that the UE shall be capable of evaluating that an already identified UTRA FDD cell has met reselection criterion defined in TS 36.304 [1] within $(N_{UTRA_carrier,normal}) * T_{evaluateUTRA_FDD}$ if the cell is in normal performance group and within 6 * $N_{UTRA_carrier,reduced} * T_{evaluateUTRA_FDD}$ if the cell is in reduced performance group when $T_{reselection} = 0$ as speficied in table 4.2.2.5.1-1 provided that the reselection criteria is met by a margin of at least 6dB for reselections based on RSCP, or a margin of at least 3dB for reselections based on Ec/Io.

If $T_{reselection}$ timer has a non zero value and the UTRA FDD cell is satisfied with the reselection criteria which are defined in [1], the UE shall evaluate this UTRA FDD cell for the $T_{reselection}$ time. If this cell remains satisfied with the reselection criteria within this duration, then the UE shall reselect that cell.

DRX cycle length [s]	T _{detectUTRA_FDD} [s]	T _{measureUTRA_FDD} [s] (number of DRX cycles)	T _{evaluateUTRA_FDD} [s] (number of DRX cycles)
0.32		5.12 (16)	15.36 (48)
0.64	30	5.12 (8)	15.36 (24)
1.28		6.4(5)	19.2 (15)
2.56	60	7.68 (3)	23.04 (9)

Table 4.2.2.5.1-1: $T_{detectUTRA_FDD}$, $T_{measureUTRA_FDD}$, and $T_{evaluateUTRA_FDD}$

For higher priority cells, a UE may optionally use a shorter value for $T_{measureUTRA_FDD}$, which shall not be less than Max(0.64 s, one DRX cycle).

4.2.2.5.2 Measurements of UTRAN TDD cells

When the measurement rules indicate that UTRA TDD cells are to be measured, the UE shall measure P-CCPCH RSCP of detected UTRA TDD cells in the neighbour frequency list at the minimum measurement rate specified in this section. The UE shall filter P-CCPCH RSCP measurements of each measured UTRA TDD cell using at least 2 measurements. Within the set of measurements used for the filtering, at least two measurements shall be spaced by at least half the minimum specified measurement period. P-CCPCH RSCP of UTRAN TDD cells shall not be filtered over a longer period than that specified in table 4.2.2.5.2-1.

The UE shall evaluate whether newly detectable UTRA TDD cells in normal performance group have met the reselection criteria in TS 36.304 within time ($N_{UTRA_carrier_TDD,normal}$) * $T_{detectUTRA_TDD}$, and evaluate whether newly detectable UTRA TDD cells in reduced performance group have met the reselection criteria in TS 36.304 within time 6 * $N_{UTRA_carrier_TDD,reduced}$ * $T_{detectUTRA_TDD}$ when $Srxlev \leq S_{nonIntraSearchP}$ or $Squal \leq S_{nonIntraSearchP}$ when $T_{reselection} = 0$ provided that the reselection criteria is met by a margin of at least 6dB.

Cells which have been detected shall be measured at least every $(N_{UTRA_carrier_TDD,normal}) * T_{measureUTRA_TDD}$ for the cells in normal performance group, and at least every $6 * N_{UTRA_carrier_TDD,reduced} * T_{measureUTRA_TDD}$ for the cells in reduced performance group, when $Srxlev \leq S_{nonIntraSearchP}$ or $Squal \leq S_{nonIntraSearchP}$.

When higher priority UTRA TDD cells are found by the higher priority search, they shall be measured at least every $T_{measure,UTRA_TDD}$. If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection. However, the minimum measurement filtering requirements specified later in this clause shall still be met by the UE before it makes any determination that it may stop measuring the cell.

For a cell that has been already detected, but that has not been reselected to, the filtering shall be such that the UE shall be capable of evaluating that an already identified UTRA TDD cell has met reselection criterion defined in [1] within $N_{UTRA_carrier_TDD,normal} *T_{evaluateUTRA_TDD}$ if the cell is in normal performance group and within $6 * N_{UTRA_carrier_TDD,reduced} * T_{evaluateUTRA_TDD}$ if the cell is in reduced performance group when $T_{reselection} = 0$ as specified in table 4.2.2.5.2-1 provided that the reselection criteria is met by a margin of at least 6dB.

If $T_{reselection}$ timer has a non zero value and the UTRA TDD cell is satisfied with the reselection criteria which are defined in [1], the UE shall evaluate this UTRA TDD cell for the $T_{reselection}$ time. If this cell remains satisfied with the reselection criteria within this duration, then the UE shall reselect that cell.

DRX T_{detectUTRA_TDD} TmeasureUTRA_TDD TevaluateUTRA_TDD [s] (number of cycle [s] (number of [s] DRX cycles) DRX cycles) length [s] 5.12 (16) 15.36 (48) 0.32 0.64 30 5.12 (8) 15.36 (24) 1.28 6.4(5) 19.2 (15) 60 7.68 (3) 23.04 (9) 2.56

Table 4.2.2.5.2-1: T_{detectUTRA_TDD}, T_{measureUTRA_TDD} and T_{evaluateUTRA_TDD}

For higher priority cells, a UE may optionally use a shorter value for $T_{measureUTRA_TDD}$, which shall not be less than Max(0.64 s, one DRX cycle).

4.2.2.5.3 Measurements of GSM cells

When the measurement rules defined in [1] indicate that E-UTRAN inter-frequencies or inter-RAT frequency cells are to be measured, the UE shall measure the signal level of the GSM BCCH carriers if the GSM BCCH carriers are indicated in the measurement control system information of the serving cell. GSM BCCH carriers of lower priority than the serving cell shall be measured at least every T_{measure,GSM} (see table 4.2.2.5.3-1).

When higher priority GSM BCCH carriers are found by the higher priority search, they shall be measured at least every $T_{\text{measure,GSM}}$, and the UE shall decode the BSIC of the GSM BCCH carrier. If, after detecting a cell in a higher priority search, it is determined that reselection has not occurred then the UE is not required to continuously measure the detected cell to evaluate the ongoing possibility of reselection, or to continuously verify the BSIC of the GSM BCCH carrier every 30s. However, the minimum measurement filtering requirements specified later in this clause shall still be met by the UE before it makes any determination that it may stop measuring the cell.

The UE shall maintain a running average of 4 measurements for each GSM BCCH carrier. The measurement samples for each cell shall be as far as possible uniformly distributed over the averaging period.

If continuous GSM measurements are required by the measurement rules in [1], the UE shall attempt to verify the BSIC at least every 30 seconds for each of the 4 strongest GSM BCCH carriers. If a change of BSIC is detected for one GSM cell then that GSM BCCH carrier shall be treated as a new GSM neighbour cell. If the UE detects on a BCCH carrier a BSIC which is indicated as not allowed for that carrier in the measurement control system information of the serving cell, the UE is not required to perform BSIC re-confirmation for that cell.

The UE shall not consider the GSM BCCH carrier in cell reselection, if the UE cannot demodulate the BSIC of that GSM BCCH carrier. Additionally, the UE shall not consider a GSM neighbour cell in cell reselection, if it is indicated as not allowed in the measurement control system information of the serving cell.

If $T_{reselection}$ timer has a non zero value and the GSM cell is satisfied with the reselection criteria which are defined in [1], the UE shall evaluate this GSM cell for the $T_{reselection}$ time. If this cell remains satisfied with the reselection criteria within this duration, then the UE shall reselect that cell.

Table 4.2.2.5.3-1: T_{measure,GSM},

DRX cycle length [s]	T _{measure,GSM} [s] (number of DRX cycles)
0.32	5.12 (16)
0.64	5.12 (8)
1.28	6.4(5)
2.56	7.68 (3)

4.2.2.5.4 Measurements of HRPD cells

In order to perform measurement and cell reselection to HRPD cell, the UE shall acquire the timing of HRPD cells.

When the measurement rules indicate that HRPD cells are to be measured, the UE shall measure CDMA2000 HRPD Pilot Strength of HRPD cells in the neighbour cell list at the minimum measurement rate specified in this section.

The parameter 'Number of HRPD Neighbor Frequency', which is transmitted on E-UTRAN BCCH, is the number of carriers used for all HRPD cells in the neighbour cell list.

When the E-UTRA serving cell fulfils $Srxlev > S_{nonIntraSearchP}$ and $Squal > S_{nonIntraSearchQ}$, the UE shall search for CDMA2000 HRPD layers of higher priority at least every $T_{higher_priority_search}$ where $T_{higher_priority_search}$ is defined in clause 4.2.2.

For CDMA2000 HRPD cells which have been detected, the UE shall measure CDMA2000 HRPD Pilot Strength at least every (Number of HRPD Neighbor Frequency)* $T_{measureHRPD}$, when the E-UTRA serving cell Srxlev $\leq S_{nonIntraSearchP}$ or Squal $\leq S_{nonIntraSearchO}$.

The UE shall be capable of evaluating that the CDMA2000 HRPD cell has met cell reselection criterion defined in [1] within $T_{\text{evaluateHRPD}}$.

Table 4.2.2.5.4-1 gives values of $T_{measure HRPD}$ and $T_{evaluate HRPD}$.

Table 4.2.2.5.4-1: T_{measureHRPD} and T_{evaluateHRPD}

DRX cycle length [s]	T _{measureHRPD} [s] (number of DRX cycles)	T _{evaluateHRPD} [s] (number of DRX cycles)
0.32	5.12 (16)	15.36 (48)
0.64	5.12 (8)	15.36 (24)
1.28	6.4 (5)	19.2 (15)
2.56	7.68 (3)	23.04 (9)

If $T_{reselection}$ timer has a non zero value and the CDMA2000 HRPD cell is satisfied with the reselection criteria which are defined in [1], the UE shall evaluate this CDMA2000 HRPD cell for the $T_{reselection}$ time. If this cell remains satisfied with the reselection criteria within this duration, then the UE shall reselect that cell.

4.2.2.5.5 Measurements of cdma2000 1X

In order to perform measurement and cell reselection to cdma2000 1X cell, the UE shall acquire the timing of cdma2000 1X cells.

When the measurement rules indicate that cdma2000 1X cells are to be measured, the UE shall measure cdma2000 1x RTT Pilot Strength of cdma2000 1X cells in the neighbour cell list at the minimum measurement rate specified in this section.

The parameter 'Number of CDMA2000 1X Neighbor Frequency', which is transmitted on E-UTRAN BCCH, is the number of carriers used for all cdma2000 1X cells in the neighbour cell list.

When the E-UTRA serving cell fulfils $Srxlev > S_{nonIntraSearchP}$ and $Squal > S_{nonIntraSearchQ}$, the UE shall search for cdma2000 1X layers of higher priority at least every $T_{higher_priority_search}$ where $T_{higher_priority_search}$ is defined in clause 4.2.2.

For CDMA2000 1X cells which have been detected, the UE shall measure CDMA2000 1xRTT Pilot Strength at least every (Number of CDMA2000 1X Neighbor Frequency)* $T_{measureCDMA2000_1X}$, when the E-UTRA serving cell Srxlev $\leq S_{nonIntraSearchP}$ or Squal $\leq S_{nonIntraSearchP}$. The UE shall be capable of evaluating that the cdma2000 1X cell has met cell reselection criterion defined in [1] within $T_{evaluateCDMA2000_1X}$.

Table 4.2.2.5.5-1 gives values of T_{measureCDMA2000 1X} and T_{evaluateCDMA2000 1X}.

Table 4.2.2.5.5-1: T_{measureCDMA2000 1X and} T_{evaluateCDMA2000 1X}

DRX cycle length [s]	T _{measureCDMA2000_1X} [s] (number of DRX cycles)	T _{evaluateCDMA2000_1X} [s] (number of DRX cycles)
0.32	5.12 (16)	15.36 (48)
0.64	5.12 (8)	15.36 (24)
1.28	6.4 (5)	19.2 (15)
2.56	7.68 (3)	23.04 (9)

If $T_{reselection}$ timer has a non zero value and the CDMA2000 1X cell is satisfied with the reselection criteria which are defined in [1], the UE shall evaluate this CDMA2000 1X cell for the $T_{reselection}$ time. If this cell remains satisfied with the reselection criteria within this duration, then the UE shall reselect that cell.

4.2.2.6 Evaluation of cell re-selection criteria

The UE shall evaluate the intra-frequency, inter-frequency and inter-RAT cell reselection criteria defined in [1] at least every DRX cycle. When a non zero value of $T_{reselection}$ is used, the UE shall only perform reselection on an evaluation which occurs simultaneously to, or later than the expiry of the $T_{reselection}$ timer.

4.2.2.7 Maximum interruption in paging reception

UE shall perform the cell re-selection with minimum interruption in monitoring downlink channels for paging reception.

At intra-frequency and inter-frequency cell re-selection, the UE shall monitor the downlink of serving cell for paging reception until the UE is capable to start monitoring downlink channels of the target intra-frequency and inter-frequency cell for paging reception. The interruption time shall not exceed $T_{SI\text{-}EUTRA} + 50$ ms.

At inter-RAT cell re-selection, the UE shall monitor the downlink of serving cell for paging reception until the UE is capable to start monitoring downlink channels for paging reception of the target inter-RAT cell. For E-UTRAN to UTRA cell re-selection the interruption time must not exceed $T_{\text{SI-UTRA}} + 50$ ms. For E-UTRAN to GSM cell reselection the interruption time must not exceed $T_{\text{BCCH}} + 50$ ms.

 $T_{SI\text{-}EUTRA}$ is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in TS 36.331 [2] for a E-UTRAN cell.

 $T_{SI-UTRA}$ is the time required for receiving all the relevant system information data according to the reception procedure and the RRC procedure delay of system information blocks defined in [7] for a UTRAN cell.

T_{BCCH} is the maximum time allowed to read BCCH data from a GSM cell defined in [8].

These requirements assume sufficient radio conditions, so that decoding of system information can be made without errors and does not take into account cell re-selection failure.

At cell re-selection to HRPD, the UE shall monitor the downlink of serving cell for paging reception until the UE is capable of starting to monitor downlink channels for paging reception of the target HRPD cell. For HRPD cell reselection the interruption time must not exceed $T_{SI-HRPD} + 50$ ms.

 $T_{SI-HRPD}$ is the time required for receiving all the relevant system information data according to the reception procedure and the upper layer (Layer 3) procedure delay of system information blocks defined in [11] in for HRPD cell.

At cell re-selection to cdma2000 1X, the UE shall monitor the downlink of serving cell for paging reception until the UE is capable of starting to monitor downlink channels for paging reception of the target cdma2000 1X cell. For cdma2000 1X cell re-selection the interruption time must not exceed $T_{SI\text{-}cdma2000\ 1X} + 50$ ms.

 $T_{SI\text{-}cdma2000_1X}$ is the time required for receiving all the relevant system information data according to the reception procedure and the upper layer (Layer 3) procedure delay of system information blocks defined in [15] for cdma2000 1X cell.

4.2.2.8 void

4.2.2.9 UE measurement capability

For idle mode cell re-selection purposes, the UE shall be capable of monitoring at least:

- Intra-frequency carrier, and
- Depending on UE capability, 3 FDD E-UTRA inter-frequency carriers, and
- Depending on UE capability, 3 TDD E-UTRA inter-frequency carriers, and
- Depending on UE capability, 3 FDD UTRA carriers, and

- Depending on UE capability, 3 TDD UTRA carriers, and
- Depending on UE capability, 32 GSM carriers, and
- Depending on UE capability, 3 cdma2000 1x carriers, and
- Depending on UE capability, 3 HRPD carriers.

In addition to the requirements defined above, a UE supporting E-UTRA measurements in RRC_IDLE state shall be capable of monitoring a total of at least 8 carrier frequency layers, which includes serving layer, comprising of any above defined combination of E-UTRA FDD, E-UTRA TDD, UTRA FDD, UTRA TDD, GSM (one GSM layer corresponds to 32 cells), cdma2000 1x and HRPD layers.

4.2.2.9a UE measurement capability (Increased UE carrier monitoring)

UE which support Increased UE carrier monitoring E-UTRAccording to the capabilities in [2,31] shall be capable of monitoring at least

- Depending on UE capability, 8 FDD E-UTRA inter-frequency carriers, and
- Depending on UE capability, 8 TDD E-UTRA inter-frequency carriers

UE which support increased UE carrier monitoring UTRA according to the capabilities in [2,31] shall additionally be capable of monitoring at least

- Depending on UE capability, 6 FDD UTRA carriers, and
- Depending on UE capability, 7 TDD UTRA carriers, and

In addition to the requirements defined above, a UE supporting E-UTRA measurements in RRC_IDLE state and supporting Increased UE carrier monitoring E-UTRA or increased UE carrier monitoring UTRA according to the capabilities in [2,31] shall be capable of monitoring a total of at least 13 carrier frequency layers, which includes serving layer, comprising of any above defined combination of E-UTRA FDD, E-UTRA TDD, UTRA FDD, UTRA TDD, GSM (one GSM layer corresponds to 32 cells), cdma2000 1x and HRPD layers.

4.2.2.10 Reselection to CSG cells

Note: Requirements in this clause are minimum requirements defined to ensure the testability of autonomous CSG search. Further information on autonomous search times in practical deployments is available in [25].

Reselection from non CSG to CSG cells may be performed using UE autonomous search as defined in [1] when at least one CSG ID is included in the UE's CSG whitelist. The requirements in this clause are valid for reselection to CSG cells previously visited by the UE when the radio configuration parameters, including the carrier frequency and physical cell identity of the CSG cell, non CSG cell and other neighbour cells are unchanged from the most recent previous visit.

NOTE: According to [1], the UE autonomous search function, per UE implementation, determines when and/or where to search for allowed CSG cells.

4.2.2.10.1 Reselection from a non CSG to an inter-frequency CSG cell

The UE shall perform search and reselection to an allowed inter-frequency CSG cell that has met CSG reselection criterion defined in [1] and that is in its whitelist, within 6 minutes in the conditions shown in table 4.2.2.10.1-1. There is no need for statistical testing of this requirement.

Table 4.2.2.10.1-1: Parameters for CSG inter-frequency reselection

Parameter	Unit	Cell 1	Cell 2
EARFCN Note1		Channel 1	Channel 2
CSG indicator		False	True
Physical cell identity ^{Note1}		1	2
CSG identity		Not sent	Sent
			(Already stored
			in UE whitelist
			from previous
			visit)
Propagation conditions		Static, non	multipath
CSG cell previously		Ye	S
visited by UE			
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB	0	0
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA ^{Note 1}	dB		
OCNG_RB ^{Note 1}	dB		
Qrxlevmin	dBm	-140	-140
N_{oc}	dBm/15 kHz	Of	f
RSRP Note2	dBm/15 KHz	-110	-110
	For this requirement to be applicable, the EARFCN and physical cell		
	identity for cell 1 and cell 2 shall be unchanged from when the CSG cell		
	was visited previously		
of success on every attempt made by UE			

4.2.2.10.2 Reselection from a non CSG to an inter-RAT UTRAN FDD CSG cell

The UE shall perform search and reselection to an allowed inter-RAT UTRAN FDD CSG cell that has met CSG reselection criterion defined in [1] and that is in its whitelist, within 6 minutes in the conditions shown in table 4.2.2.10.2-1. There is no need for statistical testing of this requirement.

Table 4.2.2.10.2-1: Parameters for CSG inter-RAT UTRAN FDD reselection

Parameter	Unit	Cell 1	Cell 2	
EARFCN Note1		Channel 1	N/A	
UARFCN Note1		N/A	Channel 2	
CSG indicator		False	True	
Physical cell identity ^{Note1}		1	N/A	
Primary scrambling code		N/A	Scrambling	
Note1			code 2	
CSG identity		Not sent	Sent	
			(Already stored	
			in UE whitelist	
			from previous	
			visit)	
Propagation conditions		Static, non		
CSG cell previously		Ye	S	
visited by UE			T	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB	0	N/A	
PHICH_RB	dB	U	IN/A	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
Qrxlevmin	dBm	-140		
N_{oc}	dBm/15 kHz	Off		
RSRP Note2	dBm/15 KHz	-110		
CPICH_RSCP Note2	dBm		-100	
CPICH_Ec/lor	dB		-10	
PCCPCH_Ec/lor	dB		-12	
SCCPCH_Ec/lor	dB	N1/A	-12	
AICH_Ec/lor	dB	N/A	-15	
SCH_Ec/lor	dB		-15	
PICH_Ec/lor	dB		-15	
I_{oc}	dBm/3.84 MHz		Off	
Note 1: For this requirement to be applicable, the EARFCN and physical cell				

Note 1: For this requirement to be applicable, the EARFCN and physical cell identity for cell 1 and the UARFCN and scrambling code for cell 2 shall be unchanged from when the CSG cell was visited previously

Note 2: Chosen to ensure that CSG autonomous search has a high probability of success on every attempt made by UE

4.3 Minimization of Drive Tests (MDT)

UE supporting minimisation of drive tests in RRC_IDLE shall be capable of:

- logging measurements in RRC_IDLE, reporting the logged measurements and meeting requirements in this clause;
- logging of RRC connection establishment failure, reporting the logged failure and meeting requirements in this clause;
- logging of radio link failure and handover failure, reporting the logged failure and meeting requirements in this clause.

4.3.1 Introduction

The logged MDT requirements consist of measurement requirements as specified in clause 4.3.2 and relative time stamp accuracy requirements as specified in clause 4.3.3. Both sets of requirements are applicable for intra-frequency, inter-frequency and inter-RAT cases in RRC_IDLE state. The MDT procedures are described in [27].

For RRC connection establishment failure logging and reporting, the MDT requirements consist of requirements for measurements performed and logged in RRC_IDLE state specified in clause 4.3.2 and relative time stamp accuracy requirement for RRC connection establishment failure log reporting as specified in clause 4.3.4.

4.3.2 Measurements

The requirements specified in this clause apply for the measurements (GSM carrier RSSI, UTRA CPICH RSCP, UTRA CPICH Ec/Io, P-CCPCH RSCP for UTRA 1.28 TDD, E-UTRA RSRP, E-UTRA RSRQ, MBSFN RSRP, MBSFN RSRQ, and MCH BLER) performed and logged by the UE for MDT in RRC_IDLE. The requirements apply for the measurements included in logged MDT reports and RRC connection establishment failure reports.

4.3.2.1 Requirements

The measurement values that are used to meet

- serving cell and reselection requirements as specified in sections 4.2.2.1, 4.2.2.3, 4.2.2.4, 4.2.2.5,
- MBSFN measurement requirements as specified in section 4.4,

shall also apply to values logged for MDT measurements in RRC_IDLE state.

4.3.3 Relative Time Stamp Accuracy

The relative time stamp for a logged measurement is defined as the time from the moment the MDT configuration was received at the UE until the measurement was logged, see TS 36.331 [2].

4.3.3.1 Requirements

The accuracy of the relative time stamping is such that the drift of the time stamping shall be not more than ± 2 seconds per hour.

4.3.4 Relative Time Stamp Accuracy for RRC Connection Establishment Failure Log Reporting

Relative time stamp for RRC connection establishment failure log reporting is defined as the time elapsed from the last RRC connection establishment failure to the time when the log is included in the report TS 36.331 [2]. The UE shall report the RRC connection establishment failure log, while meeting the accuracy requirement specified in clause 4.3.4.1.

4.3.4.1 Requirements

The accuracy of the relative time stamping for RRC connection establishment failure log reporting is such that the drift of the time stamping shall not be larger than \pm 0.72 seconds per hour and \pm 10 seconds over 48 hours. The relative time stamp accuracy requirements shall apply provided that:

- no power off or detach occurs after the RRC connection establishment failure had been detected and until the log is time-stamped.

NOTE: This requirement does not need to be tested.

4.3.5 Relative Time Stamp Accuracy for Radio Link Failure and Handover Failure Log Reporting

The UE shall report the radio link and handover failure log, while meeting the accuracy requirements specified in this section.

4.3.5.1 Requirements for timeSinceFailure

Relative time stamp accuracy requirements for *timeSinceFailure* reported for MDT in a radio link failure or handover failure log are specified in this clause. *timeSinceFailure* determines the time elapsed from the last radio link failure or handover failure in E-UTRA to the time when the log is included in the report TS 36.331 [2].

The accuracy of the relative time stamping for timeSinceFailure is such that the drift of the time stamping shall not be larger than \pm 0.72 seconds per hour and \pm 10 seconds over 48 hours. These relative time stamp accuracy requirements shall apply provided that:

- no power off or detach occurs after the RLF or handover failure had been detected and until the log is time-stamped.

4.4 MBSFN Measurements

4.4.1 Introduction

The requirements specified in Section 4.4 apply for MBSFN measurements (MBSFN RSRP, MBSFN RSRQ, and MCH BLER defined in [4]), which are performed in RRC_IDLE state and logged for MDT by UEs which are MBMS-capable and also indicate their MBSFN measurement logging capability [2].

UE shall measure MBSFN RSRP, MBSFN RSRQ and MCH BLER only in subframes and on carriers where UE is decoding PMCH. The requirements are specified for any carrier where PMCH is received by UE. The requirements specified in this section apply for any carrier frequency with configured MBSFN subframes with PMCH, which may be the same as or different from any serving unicast carrier.

The UE receiving PMCH on any non-serving carrier and performing MBSFN measurements shall not cause interruptions on any serving carrier in the subframes with paging and non-MBSFN multicast transmissions such as system information.

4.4.2 MBSFN RSRP measurements

The MBSFN RSRP measurement requirements for UEs in RRC_IDLE and the corresponding MBSFN RSRP measurement report mapping are the same as specified in Section 8.9.2 and 9.8.2.

4.4.3 MBSFN RSRQ measurements

The MBSFN RSRQ measurement requirements for UEs in RRC_IDLE and the corresponding MBSFN RSRQ measurement report mapping are the same as specified in Section 8.9.3 and 9.8.3.

4.4.4 MCH BLER measurements

The MCH BLER measurement requirements for UEs in RRC_IDLE and the corresponding MCH BLER measurement report mapping are the same as specified in Section 8.9.4 and 9.8.4.

4.5 Proximity-based Services

4.5.1 Introduction

This section contains the requirements for the UE capable of ProSe Direct Communication and/or ProSe Direct Discovery in RRC_IDLE state. The requirements in this section shall apply provided that the sidelink used by the UE for ProSe Direct Communication and/or ProSe Direct Discovery is on the carrier of the serving cell.

4.5.2 Requirements

When a UE in RRC_IDLE state is participating in transmissions and/or reception for ProSe Direct Discovery and/or ProSe Direct Communication, the UE shall meet all the requirements of Section 4.

Note: The UE may need to interrupt ProSe operation in order to meet the requirements of Section 4.

4.5.2.1 Interruptions with ProSe Direct Discovery

A UE capable of ProSe direct discovery in RRC_IDLE state shall not cause any interruption for the reception of paging and system information:

- while switching reception between ProSe Direct Discovery and the PCell, or
- when receiving ProSe direct discovery signals or
- while switching receiver chain ON/OFF for ProSe Direct Discovery reception if the UE has a dedicated receiver chain for ProSe Direct Discovery

4.5.2.2 Interruptions with ProSe Direct Communication

A UE capable of ProSe direct communication in RRC_IDLE state shall not cause any interruption for the reception of paging and system information:

- while switching reception between ProSe Direct Communication and the PCell, or
- when receiving ProSe direct communication signals, or
- while switching receiver chain ON/OFF for ProSe Direct Comunications reception.

4.5.2.3 Initiation/Cease of SLSS transmissions with ProSe Direct Discovery

The requirements in this subclause are applicable to a UE capable of ProSe Direct Discovery and SLSS transmission and reception.

The requirements apply when the conditions for SLSS transmissions specified in [2] are met; *networkControlledSyncTx* is not configured; and *syncTxThreshIC* is included in *SystemInformationBlockType19*. The UE shall be capable of measuring the RSRP of the cell used to transmit Prose Direct Discovery announcements and evaluate to initiate/cease SLSS transmissions within T_{evaluate,SLSS} as specified in Table 4.5.2.3-1.

Table 4.5.2.3-1: Tevaluate.SLSS with ProSe Direct Discovery

DRX cycle length [s]	T _{evaluate,SLSS} [s] (number of DRX cycles)
0.32	1.92 (6)
0.64	3.84 (6)
1.28	7.68 (6)
2.56	15.36 (6)

For the cell used to transmit ProSe Direct Discovery announcements:

- RSRP related side conditions given in Sections 9.1.2.1 and 9.1.2.2 and RSRQ related side conditions given in Clause 9.1.5.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.1 for a corresponding Band are fulfilled.

4.5.2.4 Initiation/Cease of SLSS transmissions with ProSe Direct Communication

The requirements in this subclause are applicable to a UE capable of ProSe Direct Communication.

The requirements apply when the conditions for SLSS transmissions specified in [2] are met; *networkControlledSyncTx* is not configured; and *syncTxThreshIC* is included in *SystemInformationBlockType18*. The UE shall be capable of measuring the RSRP of the cell used to transmit ProSe Direct Communication and evaluate to initiate/cease SLSS transmissions within T_{evaluate,SLSS} as specified in Table 4.5.2.4-1.

15.36 (6)

Table 4.5.2.4-1: T_{evaluate,SLSS} with ProSe Direct Communication

For the cell used to transmit ProSe Direct Communication:

- RSRP related side conditions given in Sections 9.1.2.1 and 9.1.2.2 and RSRQ related side conditions given in Clause 9.1.5.1 for a corresponding Band are fulfilled,
- SCH_RP and SCH Ês/Iot according to Annex B.2.1 for a corresponding Band are fulfilled.

2.56

5 E-UTRAN RRC_CONNECTED state mobility

Note 1: For the performance requirements specified hereafter, the state when no DRX is used is defined as follows:

- DRX parameters are not configured; or
- DRX parameters are configured and
 - o drx-InactivityTimer is running; or
 - o drx-RetransmissionTimer is running; or
 - mac-ContentionResolutionTimer is running; or
 - a Scheduling Request sent on PUCCH is pending; or
 - an uplink grant for a pending HARQ retransmission can occur and there is data in the corresponding HARQ buffer; or
 - a PDCCH indicating a new transmission addressed to the C-RNTI of the UE has not been received after successful reception of a Random Access Response for the explicitly signaled preamble (only applicable to UEs in RRC_CONNECTED).

Otherwise

- It is the state when DRX is used.

Note 2: Unless otherwise stated, the requirements in sections 5.1, 5.2.2.2, 5.2.2.3, 5.2.2.4, 5.3 and 5.4 are also applicable when a UE is configured with Scell(s) or PSCell.

5.1 E-UTRAN Handover

5.1.1 Introduction

5.1.2 Requirements

5.1.2.1 E-UTRAN FDD – FDD

The requirements in this clause are applicable to both intra-frequency and inter-frequency handovers.

5.1.2.1.1 Handover delay

Procedure delays for all procedures that can command a handover are specified in TS 36.331 [2].

When the UE receives a RRC message implying handover the UE shall be ready to start the transmission of the new uplink PRACH channel within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

Where:

 $D_{handover}$ equals the maximum RRC procedure delay to be defined in clause 11.2 in TS 36.331 [2] plus the interruption time stated in clause 5.1.2.1.2.

5.1.2.1.2 Interruption time

The interruption time is the time between end of the last TTI containing the RRC command on the old PDSCH and the time the UE starts transmission of the new PRACH, excluding the RRC procedure delay. This requirement applies when UE is not required to perform any synchronisation procedure before transmitting on the new PRACH.

When intra-frequency or inter-frequency handover is commanded, the interruption time shall be less than Tinterrupt

$$T_{interrupt} = T_{search} + T_{IU} + 20 \text{ ms}$$

Where:

 T_{search} is the time required to search the target cell when the target cell is not already known when the handover command is received by the UE. If the target cell is known, then $T_{search} = 0$ ms. If the target cell is unknown and signal quality is sufficient for successful cell detection on the first attempt, then $T_{search} = 80$ ms. Regardless of whether DRX is in use by the UE, T_{search} shall still be based on non-DRX target cell search times.

 T_{IU} is the interruption uncertainty in acquiring the first available PRACH occasion in the new cell. T_{IU} can be up to 30 ms

NOTE: The actual value of T_{IU} shall depend upon the PRACH configuration used in the target cell.

In the interruption requirement a cell is known if it has been meeting the relevant cell identification requirement during the last 5 seconds otherwise it is unknown. Relevant cell identification requirements are described in Clause 8.1.2.2.1 for intra-frequency handover and Clause 8.1.2.3.1 for inter-frequency handover.

5.2.2.2 E-UTRAN FDD – TDD

The requirements in this clause are applicable to handover from FDD to TDD. The requirements in this clause shall apply to UE supporting FDD and TDD.

The requirements in clause 5.2.2.4 apply for this section.

5.2.2.2.1 (Void)

5.2.2.2 (Void)

5.2.2.3 E-UTRAN TDD – FDD

The requirements in this clause are applicable to handover from TDD to FDD. The requirements in this clause shall apply to UE supporting FDD and TDD.

The requirements in clause 5.1.2.1 apply for this section.

5.2.2.3.1 (Void)

5.2.2.3.2 (Void)

5.2.2.4 E-UTRAN TDD – TDD

The requirements in this clause are applicable to both intra-frequency and inter-frequency handovers.

5.2.2.4.1 Handover delay

Procedure delays for all procedures that can command a handover are specified in TS 36.331 [2].

When the UE receives a RRC message implying handover, the UE shall be ready to start the transmission of the new uplink PRACH channel within $D_{handover}$ seconds from the end of the last TTI containing the RRC command.

Where:

 $D_{handover}$ equals the maximum RRC procedure delay to be defined in clause 11.2 in TS 36.331 [2] plus the interruption time stated in clause 5. 2.2.4.2.

5.2.2.4.2 Interruption time

The interruption time is the time between end of the last TTI containing the RRC command on the old PDSCH and the time the UE starts transmission of the new PRACH, excluding the RRC procedure delay. This requirement applies when UE is not required to perform any synchronisation procedure before transmitting on the new PRACH.

When intra-frequency or inter-frequency handover is commanded, the interruption time shall be less than Tinterrupt

$$T_{interrupt} = T_{search} + T_{IU} + 20 \text{ ms}$$

Where

 T_{search} is the time required to search the target cell when the target cell is not already known when the handover command is received by the UE. If the target cell is known, then $T_{search} = 0$ ms. If the target cell is unknown and signal quality is sufficient for successful cell detection on the first attempt, then $T_{search} = 80$ ms. Regardless of whether DRX is in use by the UE, T_{search} shall still be based on non-DRX target cell search times.

 T_{IU} is the interruption uncertainty in acquiring the first available PRACH occasion in the new cell. T_{IU} can be up to 30 ms.

NOTE: The actual value of T_{IU} shall depend upon the PRACH configuration used in the target cell.

In the interruption requirement a cell is known if it has been meeting the relevant cell identification requirement during the last 5 seconds otherwise it is unknown. Relevant cell identification requirements are described in Clause 8.1.2.2.2 for intra-frequency handover and Clause 8.1.2.3.4 for inter-frequency handover.

5.2.2.5 E-UTRAN HD – FDD

The requirements in this clause are applicable to intra-frequency handovers.

5.2.2.5.1 Handover delay

Procedure delays for all procedures that can command a handover are specified in TS 36.331 [2].

When the UE receives a RRC message implying handover the UE shall be ready to start the transmission of the new uplink PRACH channel within D_{handover} seconds from the end of the last TTI containing the RRC command.

Where:

D_{handover} equals the maximum RRC procedure delay to be defined in clause 11.2 in TS 36.331 [2] plus the interruption time stated in clause 5.1.2.1.2.

5.2.2.5.2 Interruption time

The interruption time is the time between end of the last TTI containing the RRC command on the old PDSCH and the time the UE starts transmission of the new PRACH, excluding the RRC procedure delay. This requirement applies when UE is not required to perform any synchronisation procedure before transmitting on the new PRACH.

When intra-frequency handover is commanded, the interruption time shall be less than Tinterrupt

$$T_{interrupt} = T_{search} + T_{IU} + 20 \text{ ms}$$

Where:

 T_{search} is the time required to search the target cell when the target cell is not already known when the handover command is received by the UE. If the target cell is known, then $T_{search}=0$ ms. If the target cell is unknown and signal quality is sufficient for successful cell detection on the first attempt, then $T_{search}=80$ ms. Regardless of whether DRX is in use by the UE, T_{search} shall still be based on non-DRX target cell search times.

 T_{IU} is the interruption uncertainty in acquiring the first available PRACH occasion in the new cell. T_{IU} can be up to 30 ms.

NOTE: The actual value of $T_{\rm IU}$ shall depend upon the PRACH configuration used in the target cell.

In the interruption requirement a cell is known if it has been meeting the relevant cell identification requirement during the last 5 seconds otherwise it is unknown. Relevant cell identification requirements are described in Clause 8.1.2.2.1 for intra-frequency handover.

5.3 Handover to other RATs

5.3.1 E-UTRAN - UTRAN FDD Handover

5.3.1.1 Introduction

The purpose of inter-RAT handover from E-UTRAN to UTRAN FDD is to change the radio access mode from E-UTRAN to UTRAN FDD. The handover procedure is initiated from E-UTRAN with a RRC message that implies a hard handover as described in TS 36.331 [2].

5.3.1.1.1 Handover delay

When the UE receives a RRC message implying handover to UTRAN the UE shall be ready to start the transmission of the new UTRA uplink DPCCH within $D_{handover}$ seconds from the end of the last E-UTRAN TTI containing the RRC MOBILITY FROM E-UTRA command.

where:

- D_{handover} equals the RRC procedure delay, which is 50 ms plus the interruption time stated in clause 5.3.1.1.2.

5.3.1.1.2 Interruption time

The interruption time is the time between the end of the last TTI containing the RRC command on the E-UTRAN PDSCH and the time the UE starts transmission on the uplink DPCCH in UTRAN FDD, excluding the RRC procedure delay. The interruption time depends on whether the target cell is known to the UE or not.

The target cell is known if it has been measured by the UE during the last 5 seconds otherwise it is unknown. The UE shall always perform a UTRA synchronisation procedure as part of the handover procedure.

If the target cell is known the interruption time shall be less than Tinterrupt1

$$T_{interrupt1} = T_{IU} + T_{sync} + 50 + 10*F_{max} + T_{MC} ms$$

If the target cell is unknown the interruption time shall be less than Tinterrupt2

$$T_{interrupt2} = T_{IU} + T_{sync} + 150 + 10*F_{max} + T_{MC} \text{ ms}$$

This requirement shall be met, provided that there is one target cell in the MOBILITY FROM E-UTRA command. Performance requirements for E-UTRA to UTRA soft handover are not specified. When UE is connected to an E-UTRA cell, UTRA SFN timing measurements are not reported. This implies that the timing of the DPCH of the UTRA target cells in the active set cannot be configured by UTRAN to guarantee that all target cells fall within the UE reception window of $T_0 + 148$ chips.

Where:

 T_{MC}

$\mathrm{T_{IU}}$	is the interruption uncertainty when changing the timing from the E-UTRAN to the new UTRAN
	cell, T _{III} can be up to one UTRA frame (10 ms).

 F_{max} denotes the maximum number of radio frames within the transmission time intervals of all transport channels that are multiplexed into the same CCTrCH on the UTRA target cell. If HS-PDSCH is configured in the UTRA target cell, F_{max} is 4 radio frames.

 T_{sync} is the time required for measuring the downlink DPCCH channel as stated in TS 25.214 [20], clause 4.3.1.2. In case higher layers indicate the usage of a post-verification period T_{sync} =0 ms. Otherwise T_{sync} =40 ms.

T_{MC} is 0ms if a single UTRA cell is configured as the handover target, otherwise 20ms if handover to UTRA with 1, 2 or 3 UTRA carriers with secondary HS-PDSCH is configured.

The phase reference is the primary CPICH.

The requirements in this clause assume that N312 has the smallest possible value i.e. only one insync is required.

5.3.2 E-UTRAN - UTRAN TDD Handover

5.3.2.1 Introduction

The purpose of inter-RAT handover from E-UTRAN to UTRAN TDD is to change the radio access mode from E-UTRAN to UTRAN TDD. The handover procedure is initiated from E-UTRAN with a RRC message that implies a hard handover as described in TS 36.331 [2].

5.3.2.2 Requirements

The requirements in this clause shall apply to UE supporting E-UTRAN and UTRAN TDD.

5.3.2.2.1 Handover delay

When the UE receives a RRC message implying E-UTRAN/UTRAN TDD handover the UE shall be ready to start the transmission of the SYNC-UL within $D_{handover}$ seconds from the end of the last TTI containing the RRC MOBILITY FROM E-UTRA command.

Where:

- D_{handover} equals the RRC procedure delay, which is 50 ms plus the interruption time stated in clause 5.3.2.2.

5.3.2.2.2 Interruption time

The interruption time is the time between the end of the last TTI containing the RRC command on the E-UTRAN PDSCH and the time the UE starts transmission on the SYNC-UL in UTRAN TDD, excluding the RRC procedure delay. The interruption time depends on whether the target cell is known to the UE or not.

The UE shall always perform a UTRA synchronisation procedure as part of the handover procedure.

If the target cell has been measured by the UE during the last 5 seconds, the interruption time shall be less than $T_{interrupt1}$

$$T_{interrupt1} = T_{offset} + T_{UL} + 30*F_{SFN} + 20 \text{ ms}$$

If the target cell has not been measured by the UE during the last 5 seconds, the interruption time shall be less than $T_{interrupt2}$

Where:

T_{offset} Equal to 10 ms, the frame timing uncertainty between the old cell and the target cell and the time

that can elapse until the appearance of a Beacon channel

T_{UL} Equal to 10 ms, the time that can elapse until the appearance of the UL timeslot in the target cell

F_{SEN} Equal to 1 if SFN decoding is required and equal to 0 otherwise

The interruption time requirements for an unknown target cell shall apply only if the signal quality of the unknown target cell is sufficient for successful synchronisation with one attempt.

5.3.3 E-UTRAN - GSM Handover

5.3.3.1 Introduction

The purpose of inter-RAT handover from E-UTRAN to GSM is to transfer a connection between the UE and E-UTRAN to GSM. The handover procedure is initiated from E-UTRAN with a RRC message (MOBILITY FROM E-UTRA). The procedure is described in in TS 36.331 [2].

5.3.3.2 Requirements

The requirements in this clause shall apply to UE supporting E-UTRAN and GSM.

The requirements given below in Tables 5.3.3.2.1-1 and 5.3.3.2.2-1 for the case where the UE has not synchronised to the GSM cell before receiving the RRC MOBILITY FROM E-UTRA command are valid when the signal quality of the GSM cell is sufficient for successful synchronisation with one attempt. If the UE is unable to synchronise to the GSM cell on the first attempt, it shall continue to search for synchronisation information for up to 800 ms duration. If after 800 ms the UE has not synchronised to the GSM cell it shall follow the handover failure procedure specified in TS 36.331 [2].

5.3.3.2.1 Handover delay

When the UE receives a RRC MOBILITY FROM E-UTRA command the UE shall be ready to transmit (as specified in [10]) on the channel of the new RAT within the value in table 5.3.3.2.1-1 from the end of the last TTI containing the RRC command. The UE shall process the RRC procedures for the MOBILITY FROM E-UTRA command within 50 ms, which is noted as RRC procedure delay.

Table 5.3.3.2.1-1: E-UTRAN/GSM handover - handover delay

UE synchronisation status	handover delay [ms]
The UE has synchronised to the GSM cell before the	90
RRC MOBILITY FROM E-UTRA COMMAND is received	
The UE has not synchronised to the GSM cell before	190
the RRC MOBILITY FROM E-UTRA COMMAND is	
received	

5.3.3.2.2 Interruption time

The interruption time is the time between the end of the last TTI containing the RRC command on the E-UTRAN PDSCH and the time the UE starts transmission on the uplink channel in GSM, excluding the RRC procedure delay. The interruption time depends on whether the UE has synchronized to the target GSM cell or not and shall be less than the value specified in table 5.3.3.2.2-1.

Table 5.3.3.2.2-1: E-UTRAN/GSM handover - interruption time

Synchronisation status	Interruption time [ms]
The UE has synchronised to the GSM cell before the	40
RRC MOBILITY FROM E-UTRA COMMAND is received	
The UE has not synchronised to the GSM cell before	140
the RRC MOBILITY FROM E-UTRA COMMAND is	
received	

5.4 Handover to Non-3GPP RATs

5.4.1 E-UTRAN – HRPD Handover

5.4.1.1 Introduction

The handover procedure from E-UTRAN to HRPD is initiated when E-UTRAN sends handover command to the UE through dedicated RRC signalling.

5.4.1.1.1 Handover delay

The handover delay ($D_{handover}$) is defined as the sum of the RRC procedure delay, which is 50 ms and the interruption time specified in clause 5.4.1.1.2.

When the UE receives a RRC message implying handover to HRPD, the UE shall be ready to start the transmission of the new reverse control channel in HRPD within $D_{handover}$ from the end of the last E-UTRAN TTI containing the RRC command.

5.4.1.1.2 Interruption time

The interruption time is the time between the end of the last TTI containing the RRC command on the E-UTRAN PDSCH and the time the UE starts transmission of the reverse control channel in HRPD, excluding the RRC procedure delay. The interruption time depends on whether the target cell is known to the UE or not.

An HRPD cell is known if it has been measured by the UE during the last 5 seconds otherwise it is unknown. Under the reference conditions specified in sub-clause 6.6 of [13], the interruption time shall be less than T_{interrupt}

$$T_{interrupt} = T_{IU} + 40 + 10*KC*SW_K + 10*OC*SW_O ms$$

Where:

 T_{IU} It is the interruption uncertainty when changing the timing from the E-UTRAN to the new HRPD cell. T_{IU} can be up to one HRPD frame (26.66 ms).

$$SW_K$$
 is $SW_K = \left\lceil \frac{srch_win_k}{60} \right\rceil$ where $srch_win_k$ is the number of HRPD chips indicated by the

search window for known target HRPD cells in the message

SW_O is SW_O =
$$\left[\frac{\text{srch_win_o}}{60}\right]$$
 where srch_win_o is the number of HRPD chips indicated by the

search window for unknown target HRPD cells in the message

KC It is the number of known target HRPD cells in the message, and

OC It is the number of unknown target HRPD cells in the message.

Note: An additional delay in the interruption time may occur due to the reverse link silence interval [11], which is specific to HRPD.

5.4.2 E-UTRAN – cdma2000 1X Handover

5.4.2.1 Introduction

The handover procedure from E-UTRAN to cdma2000 1X is initiated when E-UTRAN sends handover command to the UE through dedicated RRC signalling.

5.4.2.1.1 Handover delay

The handover delay ($D_{handover}$) is defined as the sum of the RRC procedure delay, which is 130 ms and the interruption time specified in clause 5.4.2.1.2.

When the UE receives a RRC message implying handover to cdma2000 1X, the UE shall be ready to start the transmission of the new reverse control channel in cdma2000 1X within $D_{handover}$ from the end of the last E-UTRAN TTI containing the RRC command.

5.4.2.1.2 Interruption time

The interruption time is the time between the end of the last TTI containing the RRC command on the E-UTRAN PDSCH and the time the UE starts transmission of the reverse control channel in cdma2000 1X, excluding the RRC procedure delay. The interruption time depends on whether the target cell is known to the UE or not.

A cdma2000 1X cell is known if it has been measured by the UE during the last 5 seconds otherwise it is unknown. Under the reference conditions specified in sub-clause 4.2.1 of [14], the interruption time shall be less than T_{interrupt}:

$$T_{interrupt} = T_{IU} + 140 + 10*KC*SW_K + 10*OC*SW_O ms$$

Where:

 T_{IU} It is the interruption uncertainty when changing the timing from the E-UTRAN to the new cdma2000 1X cell. T_{IU} can be up to one cdma2000 1X frame (20 ms).

$$SW_K$$
 is $SW_K = \left\lceil \frac{srch_win_k}{300} \right\rceil$ where $srch_win_k$ is the number of cdma2000 1x chips indicated by

the search window for known target cdma2000 1x cells in the message

$$SW_{O} \qquad \qquad \text{is } SW_{O} = \left\lceil \frac{srch_win_o}{300} \right\rceil \text{ where } srch_win_o \text{ is the number of } cdma2000 \text{ 1x chips indicated by}$$

the search window for unknown target cdma2000 1x cells in the message

KC It is the number of known target cdma2000 1X cells in the message, and

OC It is the number of unknown target cdma2000 1X cells in the message.

6 RRC Connection Mobility Control

6.1 RRC Re-establishment

The requirements in this clause are applicable to both E-UTRAN FDD and TDD.

6.1.1 Introduction

RRC connection re-establishment is initiated when a UE in RRC connected mode looses RRC connection due to any of these reasons: radio link failure, handover failure or radio link problem. The RRC es-tablishment procedure is specified in clause 5.3.7 in TS 36.331 [2].

6.1.2 Requirements

In RRC connected mode the UE shall be capable of sending RRCConnectionReestablishmentRequest message within $T_{re\text{-establish_delay}}$ seconds from the moment it detects a loss in RRC connection. The total RRC connection delay ($T_{re\text{-establish_delay}}$) shall be less than:

$$T_{re-establish_delay} = T_{UL_grant} + T_{UE_re-establish_delay}$$

 T_{UL_grant} : It is the time required to acquire and process uplink grant from the target PCell. The uplink grant is required to transmit RRCConnectionReestablishmentRequest message.

The UE re-establishment delay (T_{UE re-establish delay}) is specified in clause 6.1.2.1.

6.1.2.1 UE Re-establishment delay requirement

The UE re-establishment delay ($T_{UE_re-establish_delay}$) is the time between the moments when any of the conditions requiring RRC re-establishment as defined in clause 5.3.7 in TS 36.331 [2] is detected by the UE to the time when the UE sends PRACH to the target PCell. The UE re-establishment delay ($T_{UE_re-establish_delay}$) requirement shall be less than:

$$T_{UE\text{-re-establish_delay}} = 50 \text{ ms} + N_{freq} *Tsearch + T_{SI} + T_{PRACH}$$

T_{search}: It is the time required by the UE to search the target PCell.

 $T_{\text{search}} = \text{It is } 100 \text{ ms if the target PCell is known by the UE}$; the target PCell is known if it has been measured by the UE in the last 5 seconds.

 T_{search} = It is 800 ms if the target PCell is unknown by the UE; the target PCell is unknown if it has not been measured by the UE in the last 5 seconds.

 T_{SI} = It is the time required for receiving all the relevant system information according to the reception procedure and the RRC procedure delay of system information blocks defined in TS 36.331 [2] for the target PCell.

 T_{PRACH} = The additional delay caused by the random access procedure; it will be at least 10 ms due to random access occasion and there might be additional delay due to ramping procedure.

 N_{freq} : It is the total number of E-UTRA frequencies to be monitored for RRC re-establishment; $N_{\text{freq}} = 1$ if the target PCell is known.

There is no requirement if the target cell does not contain the UE context.

6.2 Random Access

6.2.1 Introduction

The random access procedure is used when establishing the layer 1 communication between the UE and E-UTRAN. The random access is specified in clause 6 of TS 36.213[3] and the control of the RACH transmission is specified in clause 5.1 of TS 36.321[17]. Contention based random access procedures can only be carried out on PCell and PSCell, while non-contention based random access procedures can be carried out on PCell, one or two activated SCell(s), and PSCell.

6.2.2 Requirements

The UE shall have capability to calculate PRACH transmission power according to the PRACH power formula defined in TS 36.213[3] and apply this power level at the first preamble or additional preambles. The absolute power applied to the first preamble shall have an accuracy as specified in table 6.3.5.1.1-1 of TS 36.101[5]. The relative power applied to additional preambles shall have an accuracy as specified in table 6.3.5.2.1-1 of 36.101[5].

The UE shall indicate a Random Access problem to upper layers if the maximum number of preamble transmission counter has been reached for the random access procedure on PCell or PSCell as specified in clause 5.1.4 in TS 36.321 [17].

The UE shall stop preamble transmission if maximum number of preamble transmission counter has been reached for the random access procedure on an activated Scell as specified in clause 5.1.4 in TS 36.321 [17].

6.2.2.1 Contention based random access

6.2.2.1.1 Correct behaviour when receiving Random Access Response reception

The UE may stop monitoring for Random Access Response(s) and shall transmit the msg3 if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

6.2.2.1.2 Correct behaviour when not receiving Random Access Response reception

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if no Random Access Response is received within the RA Response window defined in clause 5.1.4 TS 36.321.

6.2.2.1.3 Correct behaviour when receiving a NACK on msg3

The UE shall re-transmit the msg3 upon the reception of a NACK on msg3.

6.2.2.1.4 Void

6.2.2.1.5 Correct behaviour when receiving a message over Temporary C-RNTI

The UE shall send ACK if the Contention Resolution is successful.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires unless the received message includes a UE Contention Resolution Identity MAC control element and the UE Contention Resolution Identity included in the MAC control element matches the CCCH SDU transmitted in the uplink message.

6.2.2.1.6 Correct behaviour when contention Resolution timer expires

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if the Contention Resolution Timer expires.

6.2.2.2 Non-Contention based random access

6.2.2.2.1 Correct behaviour when receiving Random Access Response

The UE may stop monitoring for Random Access Response(s) if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-transmit the preamble with the calculated PRACH transmission power if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

6.2.2.2.2 Correct behaviour when not receiving Random Access Response

The UE shall re-transmit the preamble with the calculated PRACH transmission power.

6.3 RRC Connection Release with Redirection

6.3.1 Introduction

RRC connection release with redirection is initiated by the UE upon receiving the "*RRCConnectionRelease*" message from the E-UTRAN, TS 36.331 [2]. The RRC connection release with redirection procedure is specified in clause 5.3.8 in TS 36.331 [2].

The requirements in this clause are applicable to both E-UTRAN FDD and TDD.

6.3.2 Requirements

6.3.2.1 RRC connection release with redirection to UTRAN FDD

The UE shall be capable of performing the RRC connection release with redirection to the target UTRAN FDD cell within $T_{connection_release_redirect_UTRA\ FDD}$.

The time delay ($T_{connection_release_redirect_UTRA\,FDD}$) is the time between the end of the last TTI containing the RRC command, "RRCConnectionRelease" (TS 36.331 [2]) on the E-UTRAN PDSCH and the time the UE starts to send random access to the target UTRA FDD cell. The time delay ($T_{connection_release_redirect_UTRA\,FDD}$) shall be less than:

$$T_{connection_release_redirect_UTRA\ FDD} = T_{RRC_procedure_delay} + T_{identify_UTRA\ FDD} + T_{SI_UTRA\ FDD} + T_{RA}$$

The target UTRA FDD cell shall be considered detectable when:

- CPICH Ec/Io \geq -15 dB,
- SCH_Ec/Io ≥ -15 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code.

 $T_{RRC_procedure_delay}$: It is the RRC procedure for processing the received message "RRCConnectionRelease". It shall be less than 110 ms.

T_{identify-UTRA FDD}: It is the time to identify the target UTRA FDD cell. It shall be less than 500 ms.

 $T_{SI\text{-}UTRA\ FDD}$: It is the time required for acquiring all the relevant system information of the target UTRA FDD cell. This time depends upon whether the UE is provided with the relevant system information of the target UTRA FDD cell or not by the E-UTRAN before the RRC connection is released.

 T_{RA} : It is the delay caused due to the random access procedure when sending random access to the target UTRA FDD cell.

6.3.2.2 RRC connection release with redirection to GERAN

The UE shall be capable of performing the RRC connection release with redirection to the target GERAN cell within $T_{\text{connection_release_redirect_GERAN}$.

The time delay ($T_{connection_release_redirect_GERAN}$) is the time between the end of the last TTI containing the RRC command, "RRCConnectionRelease" (TS 36.331 [2]) on the E-UTRAN PDSCH and the time the UE starts to send random access to the target GERAN cell. The time delay ($T_{connection_release_redirect_GERAN}$) shall be less than:

$$T_{connection_release_redirect__GERAN} = T_{RRC_procedure_delay} + T_{identify_GERAN} + T_{SI_GERAN} + T_{RA}$$

The target GERAN cell shall be considered detectable when the UE receives the GERAN cell at levels down to 10 dB + the reference sensitivity level or reference interference levels as specified in [9].

 $T_{RRC_procedure_delay}$: It is the RRC procedure for processing the received message "RRCConnectionRelease". It shall be less than 110 ms.

T_{identify-UTRA GERAN}: It is the time to identify the BSIC of the target GERAN cell. It shall be less than 1 second.

 $T_{SI\text{-}UTRA\ GERAN}$: It is the time required for acquiring all the relevant system information of the target GERAN cell. This time depends upon whether the UE is provided with the relevant system information of the target GERAN cell or not by the E-UTRAN before the RRC connection is released.

 T_{RA} : It is the delay caused due to the random access procedure when sending random access burst to the target GERAN cell.

6.3.2.3 RRC connection release with redirection to UTRAN TDD

The UE shall be capable of performing the RRC connection release with redirection to the target UTRAN TDD cell within $T_{connection_release_redirect_UTRA\ TDD}$.

The time delay ($T_{connection_release_redirect_UTRA\ TDD}$) is the time between the end of the last TTI containing the RRC command, "RRCConnectionRelease" (TS 36.331 [2]) on the E-UTRAN PDSCH and the time the UE starts to send random access to the target UTRA TDD cell. The time delay ($T_{connection_release_redirect_UTRA\ TDD)$ shall be less than:

$$T_{connection_release_redirect_UTRA\ TDD} = T_{RRC_procedure_delay} + T_{identify_UTRA\ TDD} * N_{redirect_UTRA\ TDD} + T_{SI_UTRA\ TDD} + T_{RAC_procedure_delay} + T_{identify_UTRA\ TDD} * N_{redirect_UTRA\ TDD} + T_{SI_UTRA\ TDD} + T_{RAC_procedure_delay} + T_{identify_UTRA\ TDD} * N_{redirect_UTRA\ TDD} + T_{identify_UTRA\ TDD} + T_{identi$$

The target UTRA TDD cell shall be considered detectable when:

- P-CCPCH Ec/Io > -6 dB,
- DwPCH_Ec/Io \geq -1 dB.

 $T_{RRC_procedure_delay}$: It is the RRC procedure for processing the received message "RRCConnectionRelease". It shall be less than 110 ms.

T_{identify-UTRA TDD}: It is the time to identify the target UTRA TDD cell. It shall be less than 500 ms.

 $T_{SI\text{-}UTRA\ TDD}$: It is the time required for acquiring all the relevant system information of the target UTRA TDD cell. This time depends upon whether the UE is provided with the relevant system information of the target UTRA TDD cell or not by the E-UTRAN before the RRC connection is released.

 T_{RA} : It is the delay caused due to the random access procedure when sending random access to the target UTRA TDD cell.

 $N_{redirect-UTRA\ TDD}$: It is the total number of target UTRA TDD frequencies included in RedirectedCarrierInfo in "RRCConnectionRelease" message. It can be up to 4 UTRA TDD frequencies.

6.4 CSG Proximity Indication for E-UTRAN and UTRAN

6.4.1 Introduction

The requirements defined in this section are applicable to a UE supporting and configured with CSG proximity indication and are valid when a UE is entering the proximity of one or more CSG member cell(s) or leaving the proximity of all CSG member cell(s) on a UTRA or E-UTRA frequency as specified in [2].

The detection of CSG proximity is based on a UE autonomous search function.

6.4.2 Requirements

The UE shall initiate transmission of the ProximityIndication message with "entering" according to [2] within [6] minutes after entering the proximity of one or more CSG member cell(s) on a UTRA or E-UTRA frequency.

The UE shall initiate transmission of the ProximityIndication message with "leaving" according to [2] within [6] minutes after leaving the proximity of all CSG member cell(s) on a UTRA or E-UTRA frequency.

There is no need for statistical testing of this requirement.

NOTE:

Entering the proximity of one or more CSG member cell(s) means that the UE is near a cell whose CSG ID is in the UE's CSG whitelist (as determined based on autonomous search procedures). Leaving the proximity of one or more CSG member cell(s) means that the UE is no longer near any cell whose CSG ID is in the UE's CSG whitelist.

7 Timing and signalling characteristics

7.1 UE transmit timing

7.1.1 Introduction

The UE shall have capability to follow the frame timing change of the connected eNode B. The uplink frame transmission takes place $(N_{\text{TA}} + N_{\text{TA offset}}) \times T_{\text{s}}$ before the reception of the first detected path (in time) of the corresponding downlink frame from the reference cell. The UE shall be configured with a pTAG containing the PCell. The pTAG may also contain up to four SCells, if configured. The UE capable of supporting multiple timing advances [2] may also be configured with one or two serving cells with uplink in one or two sTAG and pTAG.

The other downlink SCell(s), if configured, will be contained in either the pTAG or the sTAG(s). In pTAG, UE shall use the PCell as the reference cell for deriving the UE transmit timing for cells in the pTAG. When the UE capable of supporting multiple timing advance [2] is configured with one or two sTAG(s), the UE shall use an activated SCell from the sTAG for deriving the UE transmit timing for cells in the sTAG. UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are defined in the following requirements. The requirements in clause 7 apply to all TAGs.

The UE capable of supporting dual connectivity shall be configured with one pTAG and may also be configured with one psTAG. The pTAG shall contain the PCell and may also contain one SCell, if configured. The psTAG shall contain the PSCell and may also contain one SCell, if configured. In pTAG, UE shall use the PCell as the reference cell for deriving the UE transmit timing for pTAG, and in psTAG, UE shall use the PSCell as the reference cell for deriving the UE transmit timing for psTAG. UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are defined in the following requirements. The requirements in clause 7 apply to both TAGs.

7.1.2 Requirements

The UE initial transmission timing error shall be less than or equal to $\pm T_e$ where the timing error limit value T_e is specified in Table 7.1.2-1. This requirement applies when it is the first transmission in a DRX cycle for PUCCH, PUSCH and SRS or it is the PRACH transmission. The reference point for the UE initial transmit timing control requirement shall be the downlink timing of the reference cell minus $(N_{TA_Ref} + N_{TA_offset}) \times T_s$. The downlink timing is defined as the time when the first detected path (in time) of the corresponding downlink frame is received from the reference cell. N_{TA_Ref} for PRACH is defined as 0. $(N_{TA_Ref} + N_{TA_offset})$ (in T_s units) for other channels is the difference between UE transmission timing and the Downlink timing immediately after when the last timing advance in clause 7.3 was applied. N_{TA_Ref} for other channels is not changed until next timing advance is received.

Table 7.1.2-1: Te Timing Error Limit

Downlink Bandwidth (MHz)	T _{e_}	
1.4	24*T _S	
≥3	12*T _S	
Note: T _S is the basic timing unit defined in TS 36.211		

When it is not the first transmission in a DRX cycle or there is no DRX cycle, and when it is the transmission for PUCCH, PUSCH and SRS transmission, the UE shall be capable of changing the transmission timing according to the received downlink frame of the reference cell except when the timing advance in clause 7.3 is applied. The UE is required to adjust its timing to within $\pm T_e$ in a TAG when,

- changing the downlink SCell for deriving the UE transmit timing for cells in the sTAG configured with one or two uplinks,
- in this TAG the transmission timing error between the UE and the reference timing exceeds $\pm Te$,
- configured with a pTAG and one or two sTAG, the transmission timing difference between TAGs does not exceed the maximum transmission timing difference (i.e., 32.47us) after such adjustment.

If the transmission timing difference after such adjustment is bigger than the maximum transmission timing difference (i.e., 32.47us) UE may stop adjustment in this TAG. The reference timing shall be $(N_{\text{TA_Ref}} + N_{\text{TA offset}}) \times T_s$ before the downlink timing of the reference cell. All adjustments made to the UE uplink timing under the above mentioned scenarios shall follow these rules:

- 1) The maximum amount of the magnitude of the timing change in one adjustment shall be T_q seconds.
- 2) The minimum aggregate adjustment rate shall be $7*T_S$ per second.
- 3) The maximum aggregate adjustment rate shall be T_q per 200ms.

where the maximum autonomous time adjustment step T_q is specified in Table 7.1.2-2.

Table 7.1.2-2: T_q Maximum Autonomous Time Adjustment Step

Downlink Bandwidth (MHz)	T _{q_}	
1.4	17.5*T _S	
3	9.5*T _S	
5	5.5*T _S	
≥10	3.5*T _S	
Note: T _S is the basic timing unit defined in TS 36.211		

7.2 UE timer accuracy

7.2.1 Introduction

UE timers are used in different protocol entities to control the UE behaviour.

7.2.2 Requirements

For UE timers specified in TS 36.331 [2], UE shall comply with the timer accuracies according to Table 7.2.2-1.

The requirements are only related to the actual timing measurements internally in the UE. They do not include the following:

- Inaccuracy in the start and stop conditions of a timer (e.g. UE reaction time to detect that start and stop conditions of a timer is fulfilled), or
- Inaccuracies due to restrictions in observability of start and stop conditions of a UE timer (e.g. TTI alignment when UE sends messages at timer expiry).

Table 7.2.2-1

Timer value [s]	Accuracy
timer value < 4	± 0.1s
timer value ≥ 4	± 2.5%

7.3 Timing Advance

7.3.1 Introduction

The timing advance is initiated from E-UTRAN with MAC message that implies and adjustment of the timing advance, see TS 36.321 [17] clause 5.2.

7.3.2 Requirements

7.3.2.1 Timing Advance adjustment delay

UE shall adjust the timing of its uplink transmission timing at sub-frame n+6 for a timing advance command received in sub-frame n.

7.3.2.2 Timing Advance adjustment accuracy

The UE shall adjust the timing of its transmissions with a relative accuracy better than or equal to $\pm 4 \, ^{*}$ T_S seconds to the signalled timing advance value compared to the timing of preceding uplink transmission. The timing advance command is expressed in multiples of $16 \, ^{*}$ T_S and is relative to the current uplink timing.

7.4 Cell phase synchronization accuracy (TDD)

7.4.1 Definition

Cell phase synchronization accuracy is defined as the maximum absolute deviation in frame start timing between any pair of cells on the same frequency that have overlapping coverage areas.

7.4.2 Minimum requirements

For Wide Area BS, the cell phase synchronization accuracy measured at BS antenna connectors shall be better than the requirement specified in table 7.4.2-1. If a cell's coverage area overlaps with another cell with different cell radius then the cell phase synchronization accuracy corresponding to the larger of the two cell sizes applies to the overlapping cells with different radii.

Table 7.4.2-1 Cell phase synchronization requirement for wide area BS (TDD)

Cell Type	Cell Radius	Requirement
Small cell	≤ 3 km	≤ 3 μs
Large cell	> 3 km	≤ 10 μs

For Home BS, the cell phase synchronization accuracy measured at BS antenna connectors shall be better than the requirement specified in table 7.4.2-2.

Table 7.4.2-2 Cell phase synchronization requirement for Home BS (TDD)

Source Cell Type	Propagation Distance	Requirement
Small cell	≤ 500 m	≤ 3 μs
Large cell	> 500 m	≤1.33 + Tpropagation US

- Note 1: $T_{propagation}$ is the propagation delay between the Home BS and the cell selected as the network listening synchronization source. In terms of the network listening synchronization source selection, the best accurate synchronization source to GNSS should be selected.
- Note 2: If the Home BS obtains synchronization without using network listening, the small cell requirement applies.

7.5 Synchronization Requirements for E-UTRAN to 1xRTT and HRPD Handovers

7.5.1 Introduction

This clause contains the synchronization requirements for eNodeB capable of supporting E-UTRAN to CDMA 1xRTT and HRPD handovers. To facilitate E-UTRAN to CDMA 1xRTT and HRPD handovers, the CDMA System Time reference needs to be provided to the UE in order for the UE to report the pilot PN phases of the target 1xRTT or HRPD cells. This is achieved through the SIB8 message broadcasted by the serving eNodeB:

If the eNodeB is synchronized to the GPS time and the LTE system frame is aligned with the start of CDMA System Time, then the size of CDMA System Time information is 39 bits and the unit is 10 ms based on a 1.2288 Mcps chip rate.

If the eNodeB is not synchronized to the GPS time or if the eNodeB is synchronized to the GPS time but its LTE system frame not aligned with the start of CDMA System time, then the size of CDMA System Time information is 49 bits and the unit is 8 CDMA chips based on 1.2288 Mcps chip rate.

The CDMA system time reference provided by the serving eNodeB has to be within a certain level of accuracy in order to facilitate accurate reporting of the pilot PN phases of the target 1xRTT or HRPD cells and enable reliable handover to the 1xRTT or HRPD networks.

7.5.2 eNodeB Synchronization Requirements

7.5.2.1 Synchronized E-UTRAN

The eNodeB shall be synchronized to the GPS time. With external source of CDMA System Time disconnected, the eNodeB shall maintain the timing accuracy within $\pm 10~\mu s$ of CDMA System Time for a period of not less than 8 hours.

The timing deviation between the SFN boundary at or immediately after the ending boundary of the SI-window in which SystemInformationBlockType8 is transmitted and the broadcasted CDMA System Time shall be within 10 μs .

7.5.2.2 Non-Synchronized E-UTRAN

The timing deviation between the SFN boundary at or immediately after the end of the boundary of the SI-window in which SystemInformationBlockType8 is transmitted and the broadcasted CDMA System Time shall be within 10 μ s. With external source of CDMA System Time disconnected the SFN boundary at or immediately after the broadcasted CDMA System Time in the SIB8 message shall maintain the timing accuracy within $\pm 10~\mu$ s of CDMA System Time for a period of not less than 8 hours.

7.6 Radio Link Monitoring

7.6.1 Introduction

The UE shall monitor the downlink link quality based on the cell-specific reference signal in order to detect the downlink radio link quality of the PCell and PSCell as specified in [3].

The UE shall estimate the downlink radio link quality and compare it to the thresholds Q_{out} and Q_{in} for the purpose of monitoring downlink radio link quality of the PCell and PSCell.

The threshold Q_{out} is defined as the level at which the downlink radio link cannot be reliably received and shall correspond to 10% block error rate of a hypothetical PDCCH transmission taking into account the PCFICH errors with transmission parameters specified in Table 7.6.1-1.

The threshold Q_{in} is defined as the level at which the downlink radio link quality can be significantly more reliably received than at Q_{out} and shall correspond to 2% block error rate of a hypothetical PDCCH transmission taking into account the PCFICH errors with transmission parameters specified in Table 7.6.1-2.

When higher-layer signalling indicates certain subframes for restricted radio link monitoring, the radio link quality shall be monitored as specified in [3].

The requirements in sections 7.6.2.1, 7.6.2.2 and 7.6.2.3 shall also apply when a time domain measurement resource restriction pattern for performing radio link monitoring measurements is configured by higher layers (TS 36.331 [2]), with or without CRS assistance information, provided that also the following additional condition is fulfilled:

The time domain measurement resource restriction pattern configured for the measured cell indicates at least one subframe per radio frame for performing the radio link monitoring measurements,

When the CRS assistance information is provided, the transmission bandwidth [30] in all intra-frequency cells in the CRS assistance information [2] is the same or larger than the transmission bandwidth of the PCell for which radio link monitoring is performed.

When the CRS assistance information is provided, the requirements in Section 7.6 shall also be met when the number of transmit antenna ports [16] of one or more cells whose CRS assistance information is provided [2] is different from the number of transmit antenna ports of the cell for which radio link monitoring is performed.

NOTE: If the UE is not provided with the CRS assistance information (TS 36.331 [2]) or the CRS assistance data is not valid throughout the entire evaluation period, then similar Release 8 and 9 requirements apply for time domain measurements restriction under colliding CRS with ABS configured in non-MBSFN subframes.

Table 7.6.1-1 PDCCH/PCFICH transmission parameters for out-of-sync

Attribute	Value
DCI format	1A
Number of control OFDM symbols	2; Bandwidth ≥ 10 MHz
	3; 3 MHz ≤ Bandwidth ≤ 10 MHz
	4; Bandwidth = 1.4 MHz
Aggregation level (CCE)	4; Bandwidth = 1.4 MHz
	8; Bandwidth ≥ 3 MHz
Ratio of PDCCH RE energy to average RS RE energy	4 dB; when single antenna port is used for cell- specific reference signal transmission by the PCell or PSCell. 1 dB: when two or four antenna ports are used
	for cell-specific reference signal transmission by the PCell or PSCell.
Ratio of PCFICH RE energy to average RS RE energy	4 dB; when single antenna port is used for cell- specific reference signal transmission by the PCell or PSCell.
	1 dB: when two or four antenna ports are used for cell-specific reference signal transmission by the PCell or PSCell.
Note 1: DCI format 1A is defined in clause 5.3.3.1.3 in TS 36.212 [21]. Note 2: A hypothetical PCFICH transmission corresponding to the number of control symbols shall be assumed.	

Table 7.6.1-2 PDCCH/PCFICH transmission parameters for in-sync

Attribute	Value
DCI format	1C
Number of control OFDM symbols	2; Bandwidth ≥ 10 MHz
	3; 3 MHz ≤ Bandwidth ≤ 10 MHz
	4; Bandwidth = 1.4 MHz
Aggregation level (CCE)	4
Ratio of PDCCH RE energy to average RS RE energy	0 dB; when single antenna port is used for cell- specific reference signal transmission by the PCell or PSCell.
	-3 dB; when two or four antenna ports are used for cell-specific reference signal transmission by the PCell or PSCell.
Ratio of PCFICH RE energy to average RS RE energy	4 dB; when single antenna port is used for cell-specific reference signal transmission by the PCell or PSCell. 1 dB: when two or four antenna ports are used
	for cell-specific reference signal transmission by the PCell or PSCell.
Note 1: DCI format 1C is defined in clause 5.3.3.1.4 in TS 36.212 [21]. Note 2: A hypothetical PCFICH transmission corresponding to the number of control symbols shall be assumed.	

7.6.2 Requirements

7.6.2.1 Minimum requirement when no DRX is used

When the downlink radio link quality of the PCell or PSCell estimated over the last 200 ms period becomes worse than the threshold Q_{out} , Layer 1 of the UE shall send an out-of-sync indication for the PCell or PSCell to the higher layers within 200 ms Q_{out} evaluation period. A Layer 3 filter shall be applied to the out-of-sync indications as specified in TS 36.331 [2].

When the downlink radio link quality of the PCell or PSCell estimated over the last 100 ms period becomes better than the threshold Q_{in} , Layer 1 of the UE shall send an in-sync indication for the PCell or PSCell to the higher layers within 100 ms Q_{in} evaluation period. A L3 filter shall be applied to the in-sync indications as specified in TS 36.331 [2].

When the UE creates autonomous gaps for identification the CGI of an E-UTRA intra-frequency cell or an E-UTRA inter-frequency cell and when higher-layer signalling indicates certain subframes for restricted radio link monitoring, the UE shall also perform radio link monitoring. In this case, the Q_{out} evaluation period ($T_{Evaluate}Q_{out}$) is 200 ms, and the Q_{in} evaluation period ($T_{Evaluate}Q_{in}$) is 100 ms $^{Note\ 1}$.

Note 1: This RLM requirement does not need to be tested.

The out-of-sync and in-sync evaluations of the PCell or PSCell shall be performed as specified in clause 4.2.1 in [3]. Two successive indications from Layer 1 shall be separated by at least 10 ms.

The transmitter power of the UE shall be turned off within 40 ms after expiry of T310 timer and the transmitter power of PSCell if configured shall be turned off within 40 ms after expiry of T313 timer as specified in clause 5.3.11 in TS 36.331 [2].

7.6.2.2 Minimum requirement when DRX is used

When DRX is used the Q_{out} evaluation period ($T_{Evaluate}Q_{out_DRX}$) and the Q_{in} evaluation period ($T_{Evaluate}Q_{in_DRX}$) is specified in Table 7.6.2.2-1 will be used.

When higher-layer signalling indicates certain subframes for restricted radio link monitoring, the Q_{out} evaluation period ($T_{Evaluate}Q_{out_DRX}$) and the Q_{in} evaluation period ($T_{Evaluate}Q_{in_DRX}$) specified in Table 7.6.2.2-2 will be used.

When the UE creates autonomous gaps for identification the CGI of an E-UTRA intra-frequency cell or an E-UTRA inter-frequency cell and when higher-layer signalling indicates certain subframes for restricted radio link monitoring, the UE shall also perform radio link monitoring. In this case, the Q_{out} evaluation period ($T_{Evaluate}Q_{out_DRX}$) and the Q_{in} evaluation period ($T_{Evaluate}Q_{in_DRX}$) specified in Table 7.6.2.2-2 will be used $T_{evaluate}$.

Note 1: This RLM requirement does not need to be tested.

When the downlink radio link quality of the PCell or PSCell estimated over the last $T_{\text{Evaluate}} Q_{\text{out_DRX}}$ [s] period becomes worse than the threshold Q_{out} , Layer 1 of the UE shall send out-of-sync indication for the PCell or PSCell to the higher layers within $T_{\text{Evaluate}} Q_{\text{out_DRX}}$ [s] evaluation period. A Layer 3 filter shall be applied to the out-of-sync indications as specified in TS 36.331 [2].

When the downlink radio link quality of the PCell or PSCell estimated over the last $T_{Evaluate_}Q_{in_DRX}$ [s] period becomes better than the threshold Q_{in} , Layer 1 of the UE shall send in-sync indications for the PCell or PSCell to the higher layers within $T_{Evaluate_}Q_{in_DRX}$ [s] evaluation period. A L3 filter shall be applied to the in-sync indications as specified in TS 36.331 [2].

The out-of-sync and in-sync evaluations of the PCell or PSCell shall be performed as specified in clause 4.2.1 in [3]. Two successive indications from Layer 1 shall be separated by at least max(10 ms, DRX_cycle_length).

Upon start of T310 timer or T313 timer as specified in clause 5.3.11 in TS 36.331 [2], the UE shall monitor the link of PCell or PSCell for recovery using the evaluation period and Layer 1 indication interval corresponding to the non-DRX mode until the expiry or stop of T310 timer or T313 timer.

The transmitter power of the UE shall be turned off within 40 ms after expiry of T310 timer and the transmitter power of PSCell if configured shall be turned off within 40 ms after expiry of T313 timer as specified in clause 5.3.11 in TS 36.331 [2].

Table 7.6.2.2-1: Qout and Qin Evaluation Period in DRX

DRX	cycle length (s)	T _{Evaluate} _Q _{out_DRX} and
		T _{Evaluate_} Q _{in_DRX} (s) (DRX cycles)
	≤ 0.01	Non-DRX requirements in
		clause 7.6.2.1 are applicable.
0.01 -	< DRX cycle ≤0.04	Note 1 (20)
0.04 < DRX cycle ≤ 0. 64		Note 1 (10)
0.64 < DRX cycle ≤ 2.56		Note 1 (5)
Note 1: Evaluation period length in time depends on the length of		gth in time depends on the length of
	the DRX cycle in use	
Note 2: MCG's DRX configuration is applied for PCell RLM		
evaluation and SCG's DRX configuration is applied for		DRX configuration is applied for
PSCell RLM evaluation		

Table 7.6.2.2-2: Q_{out} and Q_{in} Evaluation Period in DRX when higher-layer signalling restricted measurement resource

DRX cycle length (s)		T _{Evaluate} _Q _{out_DRX} and T _{Evaluate} _Q _{in_DRX} (s) (DRX cycles)
≤ 0.01		Non-DRX requirements in
		clause 7.6.2.1 are applicable.
0.01	< DRX cycle ≤0.04	Note 1 (40)
0.04 < DRX cycle ≤ 0. 16		Note 1 (20)
0. 16 < DRX cycle ≤ 0.64		Note 1 (10)
0.64 < DRX cycle ≤ 2.56		Note 1 (5)
Note 1:	Note 1: Evaluation period length in time depends on the length of	
	the DRX cycle in use	
Note 2:	Note 2: MCG's DRX configuration is applied for PCell RLM	
evaluation and SCG's DRX configuration is applied for		DRX configuration is applied for
PSCell RLM evaluation		

7.6.2.3 Minimum requirement at transitions

The out-of-sync and in-sync evaluations of the PCell shall be performed as specified in clause 4.2.1 in [3]. Two successive indications from Layer 1 shall be separated by at least max(10 ms, MCG_DRX_cycle_length). The out-of-sync and in-sync evaluations of the PSCell shall be performed as specified in clause 4.2.1 in [3]. Two successive indications from Layer 1 shall be separated by at least max(10 ms, SCG_DRX_cycle_length).

When the UE transitions between DRX and non-DRX or when DRX cycle periodicity changes, for a duration of time equal to the evaluation period corresponding to the second mode after the transition occurs, the UE shall use an evaluation period that is no less than the minimum of evaluation periods corresponding to the first mode and the second mode. Subsequent to this duration, the UE shall use an evaluation period corresponding to the second mode. This requirement shall be applied to both out-of-sync evaluation and in-sync evaluation of the PCell and PSCell.

7.6.2.4 Minimum requirement during SI Acquisition with autonomous gaps

For E-UTRAN FDD-UTRAN FDD measurements with autonomous gaps, for identification of the CGI of a UTRA FDD cell (clause 8.1.2.4.17), the UE shall also perform radio link monitoring. In this case the out-of sync and in-sync evaluation periods can be longer than those defined in sections 7.6.2.1-7.6.2.3.

For E-UTRAN TDD-UTRAN FDD measurements with autonomous gaps, for identification of the CGI of a UTRA FDD cell (clause 8.1.2.4.18), the UE shall also perform radio link monitoring. In this case the out-of sync and in-sync evaluation periods can be longer than those defined in sections 7.6.2.1-7.6.2.3.

7.6.2.5 Minimum requirement under IDC Interference

When the UE is provided with IDC solution, the UE shall also perform radio link monitoring and meet the corresponding requirements in clause 7.6.2.

7.7 SCell Activation and Deactivation Delay for E-UTRA Carrier Aggregation

7.7.1 Introduction

This section defines requirements for the delay within which the UE shall be able to activate a deactivated SCell and deactive an activated SCell in E-UTRA carrier aggregation. The requirements are applicable to an E-UTRA carrier aggregation capable UE which has been configured with up to four downlink SCells.

If multiple downlink SCells are activated or deactivated in the same MAC control element as defined in [17], the requirements shall apply to each of the SCells in the MAC control element.

7.7.2 SCell Activation Delay Requirement for Deactivated SCell

The requirements in this section shall apply for the UE configured with one downlink SCell. The requirements in this section are applicable for E-UTRA FDD, E-UTRA TDD and E-UTRA TDD-FDD carrier aggregation.

The delay within which the UE shall be able to activate the deactivated SCell depends upon the specified conditions.

Upon receiving SCell activation command in subframe n, the UE shall be capable to transmit valid CSI report and apply actions related to the activation command as specified in [17] for the SCell being activated no later than in subframe n+24 provided the following conditions are met for the SCell:

- During the period equal to max(5 measCycleSCell, 5 DRX cycles) before the reception of the SCell activation command:
 - the UE has sent a valid measurement report for the SCell being activated and
 - the SCell being activated remains detectable according to the cell identification conditions specified in section 8.3.3.2,
- SCell being activated also remains detectable during the SCell activation delay according to the cell identification conditions specified in section 8.3.3.2.

Otherwise upon receiving the SCell activation command in subframe n, the UE shall be capable to transmit valid CSI report and apply actions related to the activation command as specified in [17] for the SCell being activated no later than in subframe n+34 provided the SCell can be successfully detected on the first attempt.

If there is no reference signal received for the CSI measurement over the delay corresponding to the minimum requirements specified above, then the UE shall report corresponding valid CSI for the activated SCell on the next available uplink reporting resource after receiving the reference signal.

If there are no uplink resources for reporting the valid CSI in subframe n+24 or n+34 then the UE shall use the next available uplink resource for reporting the corresponding valid CSI.

The valid CSI is based on the UE measurement and corresponds to any CQI value specified in [3] with the exception of CQI index = 0 (out of range) provided:

- the conditions in section 7.7 are met over the entire SCell activation delay and
- the conditions for CQI reporting defined in Section 7.2.3 of [3] are met.

In addition to CSI reporting defined above, UE shall also apply other actions related to the activation command specified in [17] for an SCell at the first opportunities for the corresponding actions once the SCell is activated.

The PCell interruption specified in section 7.8.2 shall not occur before subframe n+5 and not occur after subframe n+9 when PCell belongs to E-UTRA FDD.

The PCell interruption specified in section 7.8.2 shall not occur before subframe n+5 and not occur after subframe n+11 when PCell belongs to E-UTRA TDD.

Starting from the subframe specified in section 4.3 of [3] and until the UE has completed the SCell activation, the UE shall report CQI index = 0 (out of range) if the UE has available uplink resources to report CQI for the SCell.

7.7.3 SCell Deactivation Delay Requirement for Activated SCell

The requirements in this section shall apply for the UE configured with one downlink SCell. The requirements in this section are applicable for E-UTRA FDD, E-UTRA TDD and E-UTRA TDD-FDD carrier aggregation.

Upon receiving SCell deactivation command or upon expiry of the *sCellDeactivationTimer* in subframe n, the UE shall accomplish the deactivation actions specified in [17] for the SCell being deactivated no later than in subframe n+8.

The PCell interruption specified in section 7.8.2 shall not occur before subframe n+5 and not occur after subframe n+9 when PCell belongs to E-UTRA FDD.

The PCell interruption specified in section 7.8.2 shall not occur before subframe n+5 and not occur after subframe n+11 when PCell belongs to E-UTRA TDD.

7.7.4 SCell Activation Delay Requirement for Deactivated SCell with Muliple Downlnk SCells

The requirements in this section shall apply for the UE configured with up to four downlink SCells. The requirements in this section are applicable for E-UTRA FDD, E-UTRA TDD and E-UTRA TDD-FDD carrier aggregation.

While activating a SCell if the UE does not receive any command to activate, deactivate, configure or deconfigure any other SCell during the SCell activation delay then the UE shall meet the SCell activation delay requirements specified in section 7.7.2.

While activating a SCell if any other SCell is activated, deactivated, configured or deconfigured by the UE then the UE shall meet the SCell activation delay requirements ($T_{activate total}$) according to the following expression:

$$T_{activate_total} = T_{activate_basic} + 5 \times \sum_{i=1}^{N-1} K_i$$

Where:

T_{activate total} is the total time to activate a SCell and is expressed in subframes.

T_{activate basic} is the SCell activation delay specified in section 7.7.2;

 K_i ($0 \le K_i \le [3]$) is the number of times the other i^{th} SCell is activated, deactivated, configured or deconfigured while the SCell is being activated.

N ($2 \le N \le 4$) is the maximum number of SCells supported by the UE.

While activating a SCell:

- The interruption on the PCell and/or on the activated SCell due to the SCell activation specified in section 7.8.2 shall not occur before subframe *n*+5 and not occur after subframe *n*+11 if:
 - the PCell and/or the activated SCell being interrupted and the SCell being activated belong to E-UTRA TDD, or
 - the activated SCell being interrupted and the SCell being activated belong to E-UTRA FDD and the PCell belongs to E-UTRA TDD.
- Otherwise, the interruption on PCell and/or on the activated SCell due to the SCell activation specified in section 7.8.2 shall not occur before subframe n+5 and not occur after subframe n+9.

Starting from the subframe specified in section 4.3 of [3] and until the UE has completed the SCell activation, the UE shall report CQI index = 0 (out of range) if the UE has available uplink resources to report CQI for an SCell.

7.7.5 SCell Deactivation Delay Requirement for Activated SCell with Multiple Downlink SCells

The requirements in this section shall apply for the UE configured with up to four downlink SCells. The requirements in this section are applicable for E-UTRA FDD, E-UTRA TDD and E-UTRA TDD-FDD carrier aggregation.

The UE shall deactivate a SCell and meet the SCell deactivation delay requirements specified in section 7.7.3 regardless of whether any other SCell is activated, deactivated, configured or deconfigured or not by the UE during the SCell deactivation delay.

While deactivating a SCell:

- The interruption on the PCell and/or on the activated SCell due to the SCell deactivation specified in section 7.8.2 shall not occur before subframe *n*+5 and not occur after subframe *n*+11 if:
 - the PCell and/or the activated SCell being interrupted and the SCell being deactivated belong to E-UTRA TDD or
 - the activated SCell being interrupted and the SCell being deactivated belong to E-UTRA FDD and the PCell belongs to E-UTRA TDD.
- Otherwise, the interruption on PCell and/or the activated SCell due to the SCell deactivation specified in section 7.8.2 shall not occur before subframe n+5 and not occur after subframe n+9.

7.7.6 SCell Activation Delay Requirement for Deactivated PUCCH SCell

The requirements in this section shall apply for the UE configured with one downlink SCell and when PUCCH is configured for the SCell being activated.

If the UE has a valid TA for transmitting on an SCell then the UE shall be able to transmit valid CSI report and apply actions related to the SCell activation command as specified in [17] for the SCell being activated on the PUCCH SCell no later than in subframe n+ $T_{activate\ basic}$:

Where:

- A TA is considered to be valid provided that the *TimeAlignmentTimer* [2] assocated with the TAG containing the PUCCH SCell is running.
- T_{activate_basic} is the SCell activation delay as defined in section 7.7.2.

If the UE does not have a valid TA for transmitting on an SCell then the UE shall be capable to perform downlink actions related to the SCell activation command as specified in [17] for the SCell being activated on the PUCCH SCell no later than in subframe $n+T_{\text{activate_basic}}$ and shall be capable to perform uplink actions related to the SCell activation command as specified in [17] for the SCell being activated on the PUCCH SCell no later than in subframe $n+T_{\text{delay_PUCCH SCell}}$ and shall transmit valid CSI report for the SCell being activated on the PUCCH SCell no later than in subframe $n+T_{\text{delay_PUCCH SCell}}$, where:

$$T_{delay_PUCCH\ SCell} = T_{activate_basic} + T_1 + T_2 + T_3$$

Where:

- T₁ is the delay uncertainty in acquiring the first available PRACH occasion in the PUCCH SCell. T1 is up to 25 subframes and the actual value of T₁ shall depend upon the PRACH configuration used in the PUCCH SCell.
- T₂ is the delay for obtaining a valid TA command for the sTAG to which the SCell configured with PUCCH belongs. T₂ is up to 13 subframes.
- T_3 is the delay for applying the received TA for upling transmission. T_3 is 6 subframes.

The above delay requirement ($T_{delay_PUCCH\ SCell}$) shall apply provided that:

- The UE has received a PDCCH order to initiate RA procedure on the PUCCH SCell within T_{activate_basic} otherwise additional delay to activate the SCell is expected; and

- The RA on PUCCH SCell is not interrupted by the RA on PCell otherwise additional delay to activate the SCell is expected.

7.7.7 SCell Activation Delay Requirement for Deactivated PUCCH SCell with Multiple SCells

The requirements in this section shall apply for the UE configured with two or three downlink SCells and when PUCCH is configured for the SCell being activated.

If the UE has a valid TA for transmitting on a PUCCH SCell then the UE shall be able to transmit valid CSI report and apply actions related to the SCell activation command as specified in [17] for the SCell being activated on the PUCCH SCell no later than in subframe n+ $T_{activate total}$:

Where:

- A TA is considered to be valid provided that the *TimeAlignmentTimer* [2] assocated with the TAG containing the PUCCH SCell is running.
- T_{activate_total} is the SCell activation delay as defined in section 7.7.4.

If the UE does not have a valid TA for transmitting on an SCell then the UE shall be capable to perform downlink actions related to the SCell activation command as specified in [17] for the SCell being activated on the PUCCH SCell no later than in subframe $n+T_{activate_basic}$ and shall be capable to perform uplink actions related to the SCell activation command as specified in [17] for the SCell being activated on the PUCCH SCell no later than in subframe $n+T_{delay_PUCCH_multiple_SCells}$ and shall transmit valid CSI report for the SCell being activated on the PUCCH SCell no later than in subframe $n+T_{delay_PUCCH_multiple_SCells}$, where:

$$T_{delay_PUCCH\ multiple_SCells} = T_{activate_total} + T_1 + T_2 + T_3$$

Where:

- T_1 , T_2 and T_3 are defined in section 7.7.6

The above delay requirement (T_{delay PUCCH multiple SCells}) shall apply provided that:

- The UE has received a PDCCH order to initiate RA procedure on the PUCCH SCell within T_{activate_basic} otherwise additional delay to activate the SCell is expected; and
- The RA on PUCCH SCell is not interrupted by the RA on PCell otherwise additional delay to activate the SCell is expected.

7.7.8 SCell Deactivation Delay Requirement for Activated PUCCH SCell

The requirements in this section shall apply for the UE configured with one downlink SCell and when PUCCH is configured for the SCell being activated.

The UE shall deactivate a SCell configured with PUCCH and meet the SCell deactivation delay requirements specified in section 7.7.3.

7.7.9 SCell Deactivation Delay Requirement for Activated PUCCH SCell with Multiple SCells

The requirements in this section shall apply for the UE configured with two or three downlink SCells and when PUCCH is configured for the SCell being deactivated.

The UE shall deactivate a SCell configured with PUCCH and meet the SCell deactivation delay requirements specified in section 7.7.5.

7.7.10 SCell Activation Delay Requirement for Deactivated SCell under Frame Structure 3

The requirements in this section shall apply for E-UTRA carrier aggregation of one FDD PCell or one TDD PCell and one SCell following the frame structure type 3 [16].

The delay within which the UE shall be able to activate the deactivated SCell depends upon the specified conditions.

Upon receiving SCell activation command in subframe n, the UE shall be capable to transmit valid CSI report and apply actions related to the activation command as specified in [17] for the SCell being activated no later than in subframe $n+T_{\text{activate basic FS3}}$, provided the following conditions are met for the SCell:

- During the period equal to max(5 measCycleSCell, 5 DRX cycles) before the reception of the SCell activation command:
 - the UE has sent a valid measurement report for the SCell being activated and
 - the SCell being activated remains detectable according to the cell identification conditions specified in section 8.3.3.2,
- SCell being activated also remains detectable during the SCell activation delay according to the cell identification conditions specified in section 8.3.3.2.

Otherwise upon receiving the SCell activation command in subframe n, the UE shall be capable to transmit a valid CSI report and apply actions related to the activation command as specified in [17] for the SCell being activated no later than in subframe $n+T_{\text{activate basic FS3}}$, provided the SCell can be successfully detected on the first attempt.

$$T_{activate\ basic\ FS3} = [12] \text{ ms} + [T_{DMTC\ duration}] + (L+[1]) * T_{DMTC\ periodicity}$$
, where

 $T_{DMTC duration} \ge TBD$ ms is the DMTC duration [2],

T_{DMTC periodicity} is the periodicity of the DMTC [2],

L is the number of times the discovery signal occasion is not available at the UE during the SCell activation time.

If there is no reference signal received for the CSI measurement over the delay corresponding to the minimum requirements specified above, then the UE shall report corresponding valid CSI for the activated SCell on the next available uplink reporting resource after receiving the reference signal.

If there are no uplink resources for reporting the valid CSI in subframe $n+T_{activate_basic_FS3}$ then the UE shall use the next available uplink resource for reporting the corresponding valid CSI.

The valid CSI is based on the UE measurement and corresponds to any CQI value specified in [3] with the exception of CQI index = 0 (out of range) provided:

- the conditions in section 7.7 are met over the entire SCell activation delay and
- the conditions for CQI reporting defined in Section 7.2.3 of [3] are met.

In addition to CSI reporting defined above, UE shall also apply other actions related to the activation command specified in [17] for an SCell at the first opportunities for the corresponding actions once the SCell is activated.

The PCell interruption specified in section 7.8.2 shall not occur before subframe n+5 and not occur after subframe n+9 when PCell belongs to E-UTRA FDD.

The PCell interruption specified in section 7.8.2 shall not occur before subframe n+5 and not occur after subframe n+11 when PCell belongs to E-UTRA TDD.

Starting from the subframe specified in Section 4.3 of [3] and until the UE has completed the SCell activation, the UE shall send CSI with CQI index = 0 (out of range) if the UE has available uplink resources to report for the SCell.

7.7.11 SCell Deactivation Delay Requirement for Activated SCell under Frame Structure 3

The requirements in this section shall apply for the UE configured with one downlink SCell. The requirements in this section shall apply for E-UTRA carrier aggregation of one FDD PCell or one TDD PCell and the SCell following the frame structure type 3 [16].

Upon receiving SCell deactivation command or upon expiry of the *sCellDeactivationTimer* in subframe n, the UE shall accomplish the deactivation actions specified in [17] for the SCell being deactivated no later than in subframe n+8.

The PCell interruption specified in section 7.8.2 shall not occur before subframe n+5 and not occur after subframe n+9 when PCell belongs to E-UTRA FDD.

The PCell interruption specified in section 7.8.2 shall not occur before subframe n+5 and not occur after subframe n+11 when PCell belongs to E-UTRA TDD.

7.7.12 SCell Activation Delay Requirement for Deactivated SCell with Muliple Downlnk SCells under Frame Structure 3

The requirements in this section shall apply for the UE configured with two or three downlink SCells. The requirements in this section shall apply for E-UTRA carrier aggregation of one FDD PCell or one TDD PCell and all the SCells following the frame structure type 3 [16].

While activating a SCell, if any other SCell is activated, deactivated, configured or deconfigured by the UE, the UE shall meet the SCell activation delay requirements ($T_{activate_total_FS3}$) according to the following expression:

$$T_{activate_total_FS3} = T_{activate_basic_FS3} + T_{DMTC_periodicity} \times \sum_{i=1}^{N-1} K_i$$

where

T_{activate total FS3} is the total time to activate a SCell and is expressed in subframes,

 $T_{activate_basic_FS3_}$ is the SCell activation delay for the SCell, as specified in section 7.7.x,

T_{DMTC periodicity} is the periodicity of the DMTC [2],

 K_i (0 \leq K_i \leq [3]) is the number of times the other i^{th} SCell is activated, deactivated, configured or deconfigured while the SCell is being activated,

N ($2 \le N \le 3$) is the maximum number of SCells supported by the UE.

While activating a SCell:

- The interruption on the PCell and/or on the activated SCell specified in section 7.8.2 shall not occur before subframe n+5 and not occur after subframe n+9 when PCell belongs to E-UTRA FDD.
- The interruption on the PCell and/or on the activated SCell specified in section 7.8.2 shall not occur before subframe n+5 and not occur after subframe n+11 when PCell belongs to E-UTRA TDD.

Starting from the subframe specified in section 4.3 of [3] and until the UE has completed the SCell activation, the UE shall send CSI with CQI index = 0 (out of range) if the UE has available uplink resources to report for the SCell being activated.

7.7.13 SCell Deactivation Delay Requirement for Activated SCell with Muliple Downlnk SCells under Frame Structure 3

The requirements in this section shall apply for the UE configured with two or three downlink SCells. The requirements in this section shall apply for E-UTRA carrier aggregation of one FDD PCell or one TDD PCell and all the SCells following the frame structure type 3 [16].

The UE shall deactivate a SCell and meet the SCell deactivation delay requirements specified in section 7.7.(x+1) regardless of whether any other SCell is activated, deactivated, configured or deconfigured or not by the UE during the SCell deactivation delay.

While deactivating a SCell:

- The interruption on the PCell and/or on the activated SCell specified in section 7.8.2 shall not occur before subframe n+5 and not occur after subframe n+9 when PCell belongs to E-UTRA FDD.
- The interruption on the PCell and/or on the activated SCell specified in section 7.8.2 shall not occur before subframe n+5 and not occur after subframe n+11 when PCell belongs to E-UTRA TDD.

7.8 Interruptions with Carrier Aggregation

7.8.1 Introduction

This section contains the requirements related to the interruptions on PCell and activated SCell if configured, when up to four SCells are configured, deconfigured, activated or deactivated. The respective requirements in Section 7.8 shall apply for:

- E-UTRA FDD CA,
- E-UTRA TDD CA,
- E-UTRA TDD-FDD CA,
- inter-band CA where PCell is FDD or TDD and all the SCells are following the frame structure type 3 [16].

Note: interruptions at SCell addition/release, activation/deactivation and during measurements on SCC may not be required by all UEs.

Editor's Note: The interruptions shall not interrupt RRC signalling or ACK/NACKs related to RRC reconfiguration procedure [2] for SCell addition/release or MAC control signalling [17] for SCell activation/deactivation command. How to specify this is FFS.

7.8.2 Requirements

7.8.2.1 Interruptions at SCell addition/release for intra-band CA

When an intra-band SCell is added or released as defined in [2] the UE is allowed an interruption of up to 5 subframes on PCell during the RRC reconfiguration procedure [2]. This interruption is for both uplink and downlink of PCell.

7.8.2.2 Interruptions at SCell addition/release for inter-band CA

When an inter-band SCell is added or released as defined in [2] the UE that requires interruption is allowed an interruption of up to 1 subframe on PCell during the RRC reconfiguration procedure [2]. This interruption is for both uplink and downlink of PCell.

7.8.2.3 Interruptions at SCell activation/deactivation for intra-band CA

When an intra-band SCell is activated or deactivated as defined in [2] the UE is allowed an interruption of up to 5 subframes on PCell during the activation/deactivation delay defined in Section 7.7. This interruption is for both uplink and downlink of PCell.

7.8.2.4 Interruptions at SCell activation/deactivation for inter-band CA

When an inter-band SCell is activated or deactivated as defined in [2] the UE that requires interruption is allowed an interruption of up to 1 subframe on PCell during the activation/deactivation delay defined in Section 7.7. This interruption is for both uplink and downlink of PCell.

7.8.2.5 Interruptions during measurements on SCC for intra-band CA

PCell interruptions due to measurements on SCC when the SCell is deactivated are allowed with up to 0.5% probability of missed ACK/NACK when the configured *measCycleSCell* [2] is 640 ms or longer.

If indicated by the network using IE *allowInterruptions* [2], PCell interruptions due to measurements on SCC when the SCell is deactivated are allowed with up to 0.5% probability of missed ACK/NACK regardless of the configured *measCycleSCell* [2].

Each interruption shall not exceed 5 subframes.

7.8.2.6 Interruptions during measurements on SCC for inter-band CA

PCell interruptions due to measurements on SCC when the SCell is deactivated are allowed with up to 0.5% probability of missed ACK/NACK when the configured *measCycleSCell* [2] is 640 ms or longer.

If indicated by the network using IE *allowInterruptions* [2], PCell interruptions due to measurements on SCC when the SCell is deactivated are allowed with up to 0.5% probability of missed ACK/NACK regardless of the configured *measCycleSCell* [2].

Each interruption shall not exceed 1 subframe.

7.8.2.7 Interruptions at SCell addition/release with multiple downlink SCells

When any number of SCells between one and four is added or released using the same *RRCConnectionReconfiguration* message as defined in [2], the UE is allowed an interruption on PCell and on any activated SCell during the RRC reconfiguration procedure as follows:

- an interruption on PCell:
 - of up to 1 subframe, if the PCell is not in the same band as any of the SCells being added or released, or
 - of up to 5 subframes, if the PCell is in the same band as any of the SCells being added or released;
- an interruption on any activated SCell:
 - of up to 1 subframe, if the activated SCell is not in the same band as any of the SCells being added or released, or
 - of up to 5 subframes, if the activated SCell is in the same band as any of the SCells being added or released.

7.8.2.8 Interruptions at SCell activation/deactivation with multiple downlink SCells

When an SCell is activated or deactivated using the same MAC control element as defined in [17], the UE is allowed an interruption on PCell and on any activated SCell during the SCell activation/deactivation procedure [17] as follows:

- an interruption on PCell:
 - of up to 1 subframe, if the PCell is not in the same band as any of the SCells being activated or deactivated, or
 - of up to 5 subframes, if the PCell is in the same band as any of the SCells being activated or deactivated;
- an interruption on any activated SCell:
 - of up to 1 subframe, if the activated SCell is not in the same band as any of the SCells being activated or deactivated, or
 - of up to 5 subframes, if the activated SCell is in the same band as any of the SCells being activated or deactivated.

7.8.2.9 Interruptions during measurements on SCC with multiple downlink SCells

If one SCell is deactivated, the UE is allowed due to measurements on the SCC with deactivated SCell:

- an interruption on PCell with up to 0.5% probability of missed ACK/NACK when the configured *measCycleSCell* [2] for the deactivated SCell is 640 ms or longer.
- an interruption on PCell with up to 0.5% probability of missed ACK/NACK regardless of the configured *measCycleSCell* [2] for the deactivated SCell if indicated by the network using IE *allowInterruptions* [2],

Each interruption shall not exceed:

- 1 subframes if the PCell is not in the same band as the deactivated SCell
- 5 subframes if the PCell is in the same band as the deactivated SCell
- an interruption on any activated SCell with up to 0.5% probability of missed ACK/NACK when the configured *measCycleSCell* [2] for the deactivated SCell is 640 ms or longer .
- an interruption on any activated SCell with up to 0.5% probability of missed ACK/NACK regardless of the configured *measCycleSCell* [2] for the deactivated SCell if indicated by the network using IE *allowInterruptions* [2].

Each interruption shall not exceed:

- 1 subframes if the activated SCell is not in the same band as the deactivated SCell
- 5 subframes if the activated SCell is in the same band as the deactivated SCell

If two, three, or four SCells are deactivated, the UE is allowed due to measurements on the SCCs with deactivated SCells:

- an interruption on PCell with up to 0.5% probability of missed ACK/NACK when any of the configured *measCycleSCell* [2] for the deactivated SCells is 640 ms or longer.
- an interruption on PCell with up to 0.5% probability of missed ACK/NACK regardless of the configured measCycleSCell [2] for thedeactivated SCells if indicated by the network using IE allowInterruptions [2].
- an interruption on an activated SCell with up to 0.5% probability of missed ACK/NACK when any of the configured *measCycleSCell* [2] for the deactivated SCells is 640 ms or longer.
- an interruption on an activated SCell with up to 0.5% probability of missed ACK/NACK regardless of the configured *measCycleSCell* [2] for the deactivated SCells if indicated by the network using IE *allowInterruptions* [2].

Each interruption on the PCell shall not exceed:

- 1 subframes if the PCell is not in the same band as any of the deactivated SCells
- 5 subframes if the PCell is in the same band as any of the deactivated SCells

Each interruption on the activated Cell shall not exceed:

- 1 subframe if the activated SCell is not in the same band as any of the deactivated SCells
- 5 subframes if the the activated SCell is in the same band as any of the deactivated SCells

7.8.2.10 Interruptions at overlapping addition/release/activation/deactivation of SCells

If a UE is commanded by the network to sequentially add/release/activate/deactivate SCells, and a new procedure of addition/release/activation/deactivation of SCell(s) takes place before the completion of previous procedure of addition/release/activation/deactivation of SCell(s), the interruptions on PCell due to sequential addition/release/activation/deactivation of SCells shall not exceed the sum of the allowed interruptions on the PCell caused by each of the addition/release/activation/deactivation procedures, and the interruptions on already activated SCell due to sequential addition/release/activation/deactivation of SCells shall not exceed the sum of the allowed interruptions on the SCell caused by each of the addition/release/activation/deactivation procedures, as defined in above sections.

7.9 Maximum Transmission Timing Difference in Carrier Aggregation

7.9.1 Introduction

A UE shall be capable of handling a relative received time difference between the PCell and SCell to be aggregated in inter-band CA and intra-band non-contiguous CA.

7.9.2 Minimum Requirements for Interband Carrier Aggregation

The UE shall be capable of handling at least a relative received time difference between the signals received from the PCell and the SCell at the UE receiver of up to 30.26 µs when one SCell is configured.

When two, three, or four SCells are configured, the UE shall be capable of handling at least a relative propagation delay difference between the signals received from any pair of the serving cells (PCell and the SCells) at the UE receiver of up to 30.26 µs.

The UE shall be capable of handling a maximum uplink transmission timing difference between the pTAG and the sTAG of at least 32.47µs provided that the UE is:

- configured with inter-band CA and
- configured with the pTAG and the sTAG,

A UE configured with pTAG and sTAG may stop transmitting on the SCell if after timing adjusting due to received TA command the uplink transmission timing difference between PCell and SCell exceeds the maximum value the UE can handle as specified above.

The UE shall be capable of handling a maximum uplink transmission timing difference between the pTAG and any of the two sTAGs or between the two sTAGs of at least 32.47µs provided that the UE is:

- configured with inter-band CA and
- configured with the two sTAGs,

A UE configured with two sTAGs may stop transmitting on the SCell if after timing adjusting due to received TA command the uplink transmission timing difference between SCell in one sTAG and SCell in other sTAG exceeds the maximum value the UE can handle as specified above.

7.9.3 Minimum Requirements for Intraband non-contiguous Carrier Aggregation

The UE shall be capable of handling at least a relative received time difference between the signals received from the PCell and the SCell at the UE receiver of up to $30.26 \,\mu s$.

The UE shall be capable of handling a maximum uplink transmission timing difference between the pTAG and the sTAG of at least $32.47\mu s$ provided that the UE is:

- configured with intra-band non-contiguous CA and
- configured with the pTAG and the sTAG,

A UE configured with pTAG and sTAG may stop transmitting on the SCell if after timing adjusting due to received TA command the uplink transmission timing difference between PCell and SCell exceeds the maximum value the UE can handle as specified above.

7.9.4 Minimum Requirements for Inter-Band Carrier Aggregation under Frame Structure 3

The requirements in this section shall apply for E-UTRA inter-band carrier aggregation of one FDD PCell or one TDD PCell and the SCell(s) following the frame structure type 3 [16].

The UE shall be capable of handling at least a relative received time difference between the signals received from the PCell and the SCell at the UE receiver of up to 30.26 µs when one SCell is configured.

When two or three SCells are configured, the UE shall be capable of handling at least a relative propagation delay difference between the signals received from any pair of the serving cells (PCell and the SCells) at the UE receiver of up to $30.26 \,\mu s$.

7.10 Interruptions with RSTD Measurements with Carrier Aggregation

7.10.1 Introduction

This section contains the requirements related to the interruptions on PCell and activated SCell if configured, when performing RSTD measurements on cells belonging to at least one SCC with deactivated SCell.

Note: Interruptions during RSTD measurements on PCell and activated SCell if configured may not be required by all UEs.

7.10.2 Requirements

When common DRX is used, no interruption is allowed for all carrier aggregation configurations while the On Duration timer is running.

The interruption requirement considers only missed ACK/NACK due to reconfiguration of the receiver bandwidth, and not due to other causes such as RF impairments or channel conditions.

7.10.2.1 Interruptions during RSTD measurements on SCC for intra-band CA with one downlink SCell

PCell interruptions due to RSTD measurements on SCC when the SCell is deactivated are allowed with up to 0.5% probability of missed ACK/NACK when the PRS periodicity $T_{\rm PRS}$ is 640 ms or longer. Each interruption shall not exceed 5 subframes.

7.10.2.2 Interruptions during RSTD measurements on SCC for inter-band CA with one downlink SCell

PCell interruptions due to RSTD measurements on SCC when the SCell is deactivated are allowed with up to 0.5% probability of missed ACK/NACK when the PRS periodicity $T_{\rm PRS}$ is 640 ms or longer. Each interruption shall not exceed 1 subframe.

7.10.2.3 Interruptions during RSTD measurements on SCC with multiple downlink SCells

If one SCell is activated and the other SCell is deactivated, then due to RSTD measurements on the SCC with deactivated SCell the UE is allowed:

- an interruption on PCell with up to 0.5% probability of missed ACK/NACK when when the PRS periodicity $T_{\rm PRS}$ is 640 ms or longer. Each interruption shall not exceed:
 - o 1 subframe if the PCell is not in the same band as the deactivated SCell
 - o 5 subframes if the PCell is in the same band as the deactivated SCell
- an interruption on the activated SCell with up to 0.5% probability of missed ACK/NACK when the PRS periodicity $T_{\rm PRS}$ is 640 ms or longer. Each interruption shall not exceed:

- o 1 subframe if the activated SCell is not in the same band as the deactivated SCell
- o 5 subframes if the activated SCell is in the same band as the deactivated SCell

If both SCells are deactivated, then due to RSTD measurements on one or both SCCs with deactivated SCells the UE is allowed:

- an interruption on PCell with up to 1.0% probability of missed ACK/NACK when the configure PRS periodicity $T_{\rm PRS}$ is 640 ms or longer in any of the SCCs. Each interruption shall not exceed:
 - o 1 subframe if the PCell is not in the same band as any of the deactivated SCells
 - o 5 subframes if the PCell is in the same band as any of the deactivated SCells

7.10.2.4 Interruptions at overlapping RSTD and inter-frequency measurements

If the UE is configured for RSTD measurements on cells belonging to a SCC with deactivated SCell(s) and also with a *measCycleSCell* for performing E-UTRA carrier aggregation measurements as defined in Section 8.3 on the same SCC as configured for the RSTD measurements, then the total allowed interruption on the active serving cell(s) is the maximum of the interruption due to E-UTRA carrier aggregation measurements specified in Section 7. 8 and the interruption due to the RSTD measurements on SCC specified in this Section.

7.11 Radio Link Monitoring for UE Category 0

7.11.1 Introduction

The UE category 0 applicability of the requirements for performing radio link monitoring in subclause 7.11 is defined in Section 3.1.

The UE shall monitor the downlink link quality based on the cell-specific reference signal in order to detect the downlink radio link quality of the PCell as specified in [3].

The UE shall estimate the downlink radio link quality and compare it to the thresholds Q_{out_Cat0} and Q_{in_Cat0} for the purpose of monitoring downlink radio link quality of the PCell.

The threshold Q_{out_Cat0} is defined as the level at which the downlink radio link cannot be reliably received and shall correspond to 10% block error rate of a hypothetical PDCCH transmission taking into account the PCFICH errors with transmission parameters specified in Table 7.11.1-1.

The threshold Q_{in_Cat0} is defined as the level at which the downlink radio link quality can be significantly more reliably received than at Q_{out_Cat0} and shall correspond to 2% block error rate of a hypothetical PDCCH transmission taking into account the PCFICH errors with transmission parameters specified in Table 7.11.1-2.

Table 7.11.1-1 PDCCH/PCFICH transmission parameters for out-of-sync for UE category 0

Attribute	Value
DCI format	1A
Number of control OFDM symbols	2; Bandwidth ≥ 10 MHz
	3; 3 MHz ≤ Bandwidth < 10 MHz
	4; Bandwidth = 1.4 MHz
Aggregation level (CCE)	4; Bandwidth = 1.4 MHz
	8; Bandwidth ≥ 3 MHz
Ratio of PDCCH RE energy to average RS RE energy	4 dB; when single antenna port is used for cell-specific reference signal transmission by the PCell. 4 dB: when two or four antenna ports are used for cell-specific reference signal transmission by the PCell.
Ratio of PCFICH RE energy to average RS RE energy	4 dB; when single antenna port is used for cell-specific reference signal transmission by the PCell. 1 dB: when two or four antenna ports are used for cell-specific reference signal transmission by the PCell.
Note 1: DCI format 1A is defined in clause 5.3.3.1.3 in TS 36.212 [21]. Note 2: A hypothetical PCFICH transmission corresponding to the number of control symbols shall be assumed.	

Table 7.11.1-2 PDCCH/PCFICH transmission parameters for in-sync for UE category 0

Attribute	Value
DCI format	1C
Number of control OFDM symbols	2; Bandwidth ≥ 10 MHz
	3; 3 MHz ≤ Bandwidth < 10 MHz
	4; Bandwidth = 1.4 MHz
Aggregation level (CCE)	4
Ratio of PDCCH RE energy to average RS RE energy	1 dB; when single antenna port is used for cell- specific reference signal transmission by the PCell.
	1 dB; when two or four antenna ports are used for cell-specific reference signal transmission by the PCell.
Ratio of PCFICH RE energy to average RS RE energy	4 dB; when single antenna port is used for cell- specific reference signal transmission by the PCell.
	1 dB: when two or four antenna ports are used for cell-specific reference signal transmission by the PCell.
Note 1: DCI format 1C is defined in clause 5.3.3.1.4 in TS 36.212 [21]. Note 2: A hypothetical PCFICH transmission corresponding to the number of control symbols shall be assumed.	

7.11.2 Requirements for FD-FDD and TDD

7.11.2.1 Minimum requirement when no DRX is used

When the downlink radio link quality of the PCell estimated over the last 200 ms period becomes worse than the threshold Q_{out_Cat0} , Layer 1 of the UE shall send an out-of-sync indication for the PCell to the higher layers within 200ms Q_{out_Cat0} evaluation period. A Layer 3 filter shall be applied to the out-of-sync indications as specified in TS 36.331 [2].

When the downlink radio link quality of the PCell estimated over the last 100 ms period becomes better than the threshold Q_{in_Cat0} , Layer 1 of the UE shall send an in-sync indication for the PCell to the higher layers within 100 ms Q_{in_Cat0} evaluation period. A L3 filter shall be applied to the in-sync indications as specified in TS 36.331 [2].

The out-of-sync and in-sync evaluations of the PCell shall be performed as specified in clause 4.2.1 in [3]. Two successive indications from Layer 1 shall be separated by at least 10ms.

The transmitter power of the UE shall be turned off within 40 ms after expiry of T310 timer as specified in clause 5.3.11 in TS 36.331 [2].

7.11.2.2 Minimum requirement when DRX is used

When DRX is used for FD-FDD and TDD category 0 UEs, the Q_{out_Cat0} evaluation period ($T_{Evaluate}_Q_{out_DRX_Cat0}$) and the Q_{in_Cat0} evaluation period ($T_{Evaluate}_Q_{in_DRX_Cat0}$) is specified in Table 7.11.2.2-1 will be used.

When the downlink radio link quality of the PCell estimated over the last $T_{Evaluate} = Q_{out_DRX_Cat0}$ [s] period becomes worse than the threshold Q_{out_Cat0} , Layer 1 of the UE shall send out-of-sync indication for the PCell to the higher layers within $T_{Evaluate} = Q_{out_DRX_Cat0}$ [s] evaluation period. A Layer 3 filter shall be applied to the out-of-sync indications as specified in TS 36.331 [2].

When the downlink radio link quality of the PCell estimated over the last $T_{Evaluate}$ _ $Q_{in_DRX_Cat0}$ [s] period becomes better than the threshold Q_{in_Cat0} , Layer 1 of the UE shall send in-sync indications for the PCell to the higher layers within $T_{Evaluate}$ _ $Q_{in_DRX_Cat0}$ [s] evaluation period. A L3 filter shall be applied to the in-sync indications as specified in TS 36.331 [2].

The out-of-sync and in-sync evaluations of the PCell shall be performed as specified in clause 4.2.1 in [3]. Two successive indications from Layer 1 shall be separated by at least max(10ms, DRX_cycle_length).

Upon start of T310 timer as specified in clause 5.3.11 in TS 36.331 [2], the UE shall monitor the link for recovery using the evaluation period and Layer 1 indication interval corresponding to the non-DRX mode until the expiry or stop of T310 timer.

The transmitter power of the UE shall be turned off within 40 ms after expiry of T310 timer as specified in clause 5.3.11 in TS 36.331 [2].

Table 7.11.2.2-1: Q_{out} and Q_{in} Evaluation Period in DRX for FD-FDD and TDD UE category 0

DRX cycle length (s)	T _{Evaluate} _Q _{out_DRX_Cat0} and T _{Evaluate} _Q _{in_DRX_Cat0} (s) (DRX cycles)
≤ 0.01	Non-DRX requirements in clause 7.11.2.1 are applicable.
0.01 < DRX cycle ≤0.04	Note (20)
0.04 < DRX cycle ≤ 0. 64	Note (10)
0.64 < DRX cycle ≤ 2.56	Note (5)
Note: Evaluation period length in time depends on the length of the DRX cycle in use	

7.11.2.3 Minimum requirement at transitions

The out-of-sync and in-sync evaluations of the PCell shall be performed as specified in clause 4.2.1 in [3]. Two successive indications from Layer 1 shall be separated by at least max(10ms, DRX_cycle_length).

When the UE transitions between DRX and non-DRX or when DRX cycle periodicity changes, for a duration of time equal to the evaluation period corresponding to the second mode after the transition occurs, the UE shall use an evaluation period that is no less than the minimum of evaluation periods corresponding to the first mode and the second mode. Subsequent to this duration, the UE shall use an evaluation period corresponding to the second mode. This requirement shall be applied to both out-of-sync evaluation and in-sync evaluation of the PCell.

7.11.3 Requirements for HD-FDD

7.11.3.1 Minimum requirement when no DRX is used

The HD-FDD category 0 UE shall meet all applicable requirements specified in clause 7.11.2.1 under the following conditions

- at least 1 DL subframe per radio frame of PCell is available at the UE during Q_{in_Cat0} and Q_{out_Cat0} evaluation periods.

7.11.3.2 Minimum requirement when DRX is used

When DRX is used for HD-FDD category 0 UEs, the Q_{out} evaluation period ($T_{Evaluate} = Q_{out} = Q_{out} = Q_{out} = Q_{out}$) and the Q_{in} evaluation period ($T_{Evaluate} = Q_{in} = Q_{in} = Q_{in} = Q_{out} = Q_{$

When the downlink radio link quality of the PCell estimated over the last $T_{Evaluate} = Q_{out_DRX_Cat0}$ [s] period becomes worse than the threshold Q_{out_Cat0} , Layer 1 of the UE shall send out-of-sync indication for the PCell to the higher layers within $T_{Evaluate} = Q_{out_DRX_Cat0}$ [s] evaluation period. A Layer 3 filter shall be applied to the out-of-sync indications as specified in TS 36.331 [2].

When the downlink radio link quality of the PCell estimated over the last $T_{Evaluate}$ _ $Q_{in_DRX_Cat0}$ [s] period becomes better than the threshold Q_{in_Cat0} , Layer 1 of the UE shall send in-sync indications for the PCell to the higher layers within $T_{Evaluate}$ _ $Q_{in_DRX_Cat0}$ [s] evaluation period. A L3 filter shall be applied to the in-sync indications as specified in TS 36.331 [2].

The out-of-sync and in-sync evaluations of the PCell shall be performed as specified in clause 4.2.1 in [3]. Two successive indications from Layer 1 shall be separated by at least max(10ms, DRX_cycle_length).

Upon start of T310 timer as specified in clause 5.3.11 in TS 36.331 [2], the UE shall monitor the link for recovery using the evaluation period and Layer 1 indication interval corresponding to the non-DRX mode until the expiry or stop of T310 timer.

The transmitter power of the UE shall be turned off within 40 ms after expiry of T310 timer as specified in clause 5.3.11 in TS 36.331 [2].

Table 7.11.3.2-1: Qout and Qin Evaluation Period in DRX for HD-FDD UE category 0

DRX cycle length (s)	T _{Evaluate} _Q _{out_DRX} and
	T _{Evaluate} _Q _{in_DRX} (s) (DRX cycles)
≤ 0.01	Non-DRX requirements in
	clause 7.11.2.1 are applicable.
0.01 < DRX cycle ≤0.04	Note (40)
0.04 < DRX cycle ≤ 0. 16	Note (20)
0. 16 < DRX cycle ≤ 0.64	Note (10)
0.64 < DRX cycle ≤ 2.56	Note (5)
Note: Evaluation period length in time depends on the length of	
the DRX cycle in use	

7.11.3.3 Minimum requirement at transitions

The minimum requirements at transitions defined in clause 7.11.2.3 also apply for this section under the following conditions:

at least 1 DL subframe per radio frame of PCell is available at the UE during Q_{in_Cat0} and Q_{out_Cat0} evaluation periods.

7.12 Interruptions with Dual Connectivity

7.12.1 Introduction

This section contains the requirements related to the interruptions on PCell, PSCell, and SCell, when

PSCell is added or released, or

transitions between active and non-active during DRX, or

transitions from non-DRX to DRX, or

SCell in either MCG or SCG is added or released, or

SCell in either MCG or SCG is activated or deactivated, or

measurements on SCC with deactivated SCell in either MCG or SCG.

The requirements shall apply for E-UTRA FDD, E-UTRA TDD and E-UTRA TDD-FDD dual connectivity.

7.12.2 Requirements

7.12.2.1 Interruptions at PSCell addition/release

When a PSCell is added or released as defined in [2] the UE is allowed an interruption of up to 1 subframe on PCell and the activated SCell in MCG if configured during the RRC reconfiguration procedure [2] in synchronous dual connectivity. This interruption is for both uplink and downlink of PCell.

The UE is allowed an interruption of up to 2 subframes on PCell and the activated SCell in MCG if configured during the RRC reconfiguration procedure [2] in asynchronous dual connectivity. This interruption is for both uplink and downlink of PCell.

7.12.2.2 Interruptions at transitions between active and non-active during DRX

When PCell is in non-DRX and PSCell is in DRX, interruptions on PCell and the activated SCell in MCG if configured due to transitions from active to non-active and from non-active to active during PSCell DRX are allowed with up to 1% probability of missed ACK/NACK when the configured PSCell DRX cycle is less than 640 ms, and 0.625% probability of missed ACK/NACK is allowed when the configured PSCell DRX cycle is 640 ms or longer. Each interruption shall not exceed 1 subframe.

When PSCell is in non-DRX and PCell is in DRX, interruptions on PSCell on the activated SCell in SCG if configured due to transitions from active to non-active and from non-active to active during PCell DRX are allowed with up to 1 % probability of missed ACK/NACK when the configured PCell DRX cycle is less than 640 ms, and 0.625% probability of missed ACK/NACK is allowed when the configured PCell DRX cycle is 640 ms or longer. Each interruption shall not exceed 1 subframe.

When both PCell and PSCell are in DRX, no interruption is allowed.

7.12.2.3 Interruptions at transitions from non-DRX to DRX

Interruption on PCell and the activated SCell in MCG if configured due to PSCell transitions from non-DRX to DRX when PCell is in non-DRX shall not exceed 1subframe.

Interruption on PSCell and the activated SCell in SCG if configured due to PCell transitions from non-DRX to DRX when PSCell is in non-DRX shall not exceed 1subframe.

7.12.2.4 Interruptions at SCell addition/release

The requirements in this clause shall apply for the UE configured with PSCell.

In synchronous dual connectivity, when one SCell is added or released as defined in [2]:

- an interruption on PCell shall meet requirements in clause 7.8.2.7,
- an interruption on PSCell shall meet requirements in clause 7.8.2.7, where the term PCell in clause 7.8.2.7 shall be deemed to be replaced with PSCell.

In asynchronous dual connectivity, when one SCell belonging to MCG is added or released as defined in [2]:

- an interruption on PCell shall meet requirements in clause 7.8.2.7,
- an interruption on PSCell shall meet requirements in clause 7.8.2.7 except for the number of subframe, where the term PCell in clause 7.8.2.7 shall be deemed to be replaced with PSCell. The UE is allowed an interruption on PSCell of up to 2 subframes.

In asynchronous dual connectivity, when one SCell belonging to SCG is added or released as defined in [2]:

- an interruption on PCell shall meet requirements in clause 7.8.2.7 except for the number of subframe. The UE is allowed an interruption on PCell of up to 2 subframes.
- an interruption on PSCell shall meet requirements in clause 7.8.2.7, where the term PCell in clause 7.8.2.7 shall be deemed to be replaced with PSCell.

7.12.2.5 Interruptions at SCell activation/deactivation

The requirements in this clause shall apply for the UE configured with PSCell and one SCell.

In synchronous dual connectivity, when one SCell is activated or deactivated as defined in [17]:

- an interruption on PCell shall meet requirements in clause 7.8.2.8,
- an interruption on PSCell shall meet requirements in clause 7.8.2.8, where the term PCell in clause 7.8.2.8 shall be deemed to be replaced with PSCell.

In asynchronous dual connectivity, when one SCell belonging to MCG is activated or deactivated as defined in [17]:

- an interruption on PCell shall meet requirements in clause 7.8.2.8,
- an interruption on PSCell shall meet requirements in clause 7.8.2.8 except for the number of subframe, where the term PCell in clause 7.8.2.8 shall be deemed to be replaced with PSCell. The UE is allowed an interruption on PSCell of up to 2 subframes.

In asynchronous dual connectivity, when one SCell belonging to SCG is activated or deactivated as defined in [17]:

- an interruption on PCell shall meet requirements in clause 7.8.2.8 except for the number of subframe. The UE is allowed an interruption on PCell of up to 2 subframes,
- an interruption on PSCell shall meet requirements in clause 7.8.2.8, where the term PCell in clause 7.8.2.8 shall be deemed to be replaced with PSCell.

7.12.2.6 Interruptions during measurements on SCC

The requirements in this clause shall apply for the UE configured with PSCell and one SCell.

In synchronous dual connectivity, when one SCell is deactivated, the UE is allowed due to measurements on the SCC with the deactivated SCell:

- an interruption on PCell shall meet requirements in clause 7.8.2.9,
- an interruption on PSCell shall meet requirements in clause 7.8.2.9, where the term PCell in clause 7.8.2.8 shall be deemed to be replaced with PSCell.

In asynchronous dual connectivity, when one SCell belonging to MCG is deactivated, the UE is allowed due to measurements on the SCC with the deactivated SCell:

- an interruption on PCell shall meet requirements in clause 7.8.2.9,
- an interruption on PSCell shall meet requirements in clause 7.8.2.9 except for the number of subframe, where the term PCell in clause 7.8.2.9 shall be deemed to be replaced with PSCell. The UE is allowed an interruption on PSCell of up to 2 subframes.

In asynchronous dual connectivity, when one SCell belonging to SCG is deactivated, the UE is allowed due to measurements on the SCC with the deactivated SCell:

- an interruption on PCell shall meet requirements in clause 7.8.2.9 except for the number of subframe. The UE is allowed an interruption on PCell of up to 2 subframes
- an interruption on PSCell shall meet requirements in clause 7.8.2.9, where the term PCell in clause 7.8.2.9 shall be deemed to be replaced with PSCell.

7.13 Cell phase synchronization accuracy (Synchronized mode of dual connectivity)

7.13.1 Definition

Cell phase synchronization accuracy is defined as the maximum absolute timing mismatch between subframes which are transmitted by MeNB and SeNB and are scheduled for the same UE. The cell phase synchronization accuracy is defined only for synchronized mode of dual connectivity operation.

7.13.2 Minimum requirements

The cell phase synchronization accuracy shall not exceed the sum of absolute timing accuracy values declared by the manufacturer(s) for each BS. The cell phase synchronization accuracy requirement is optional.

NOTE: The sum of absolute timing accuracy values in synchronized mode of dual connectivity is assumed to be related to MRTD according to the following inequality:

$$T_{CPSA} + T_{RPTD} \le MRTD$$
 at the UE

Where:

T_{CPSA} is the sum of absolute timing accuracy values declared by the manufacturer(s).

T_{RPTD} is the absolute propagation time difference between MeNB and SeNB, which serve the same UE.

MRTD is the Maximum Received Timing Difference at the UE. MRTD is equal to 33 µs.

7.14 PSCell Addition and Release Delay for E-UTRA Dual Connectivity

7.14.1 Introduction

This section defines requirements for the delay within which the UE shall be able to configure a PSCell in E-UTRA dual connectivity. The requirements are applicable to an E-UTRA dual connectivity capable UE. The requirements shall apply for E-UTRA FDD, E-UTRA TDD and E-UTRA TDD-FDD dual connectivity.

7.14.2 PSCell Addition Delay Requirement

The requirements in this section shall apply for the UE configured with only PCell.

Upon receiving PSCell addition in subframe n, the UE shall be capable to transmit PRACH preamble towards PSCell no later than in subframe n+ T_{config_PSCell} :

Where:

$$T_{config_PSCell} = 20ms + T_{activation_time} + 50ms + T_{PCell_DU} + T_{PSCell_DU}$$

 $T_{activation_time}$ is the PSCell activation delay. If the PSCell is known, then $T_{activation_time}$ is 20ms. If the PSCell is unknown, then $T_{activation_time}$ is 30ms provided the PSCell can be successfully detected on the first attempt.

 T_{PCell_DU} is the delay uncertainty due to PCell PRACH preamble transmission. T_{PCell_DU} is up to 20ms if PSCell activation is interrupted by a PCell PRACH preamble transmission, otherwise it is 0.

 T_{PSCell_DU} is the delay uncertainty in acquiring the first available PRACH occasion in the PSCell. T_{PSCell_DU} is up to 30ms.

PSCell is known if it has been meeting the following conditions:

During the last [5] seconds before the reception of the PSCell configuration command:

- the UE has sent a valid measurement report for the PSCell being configured and
- the PSCell being configured remains detectable according to the cell identification conditions specified in section 8.8,
- PSCell being configured also remains detectable during the PSCell configuration delay according to the cell identification conditions specified in section 8.8.

otherwise it is unknown. The PCell interruption specified in section 7.12 is allowed only during the RRC reconfiguration procedure [2].

7.14.3 PSCell Release Delay Requirement

The requirements in this section shall apply for a UE configured with PCell and one PSCell.

Upon receiving PSCell release in subframe n, the UE shall accomplish the release actions specified in [2] no later than in subframe n+20.

The PCell interruption specified in section 7.12 is allowed only during the RRC reconfiguration procedure [2].

7.15 Maximum Receive Timing Difference in Dual Connectivity

7.15.1 Introduction

A UE shall be capable of handling a relative receive timing difference between subframe timing boundaries of the PCell and PSCell to be aggregated for E-UTRA FDD-FDD, E-UTRA-TDD-TDD, E-UTRA TDD-FDD dual connectivity.

7.15.2 Minimum Requirements for Inter-band Dual Connectivity

The UE shall be capable of handling at least a relative receive timing difference between the subframe timing of the signals received from a cell belonging to the MCG and a cell belonging to the SCG at the UE receiver of up to 33 μ s provided the UE indicates that it is capable of synchronous dual connectivity [2]. The requirements for synchronous dual connectivity are only applicable for TDD-TDD, FDD-FDD, and TDD-FDD inter-band dual connectivity.

The UE shall be capable of handling at least a relative receive timing difference between the subframe timing of the signals received from a cell belonging to the MCG and a cell belonging to the SCG at the UE receiver of up of $500 \,\mu s$ provided the UE indicates that it is capable of asynchronous dual connectivity [2]. The requirements for asynchronous dual connectivity are only applicable for FDD-FDD inter-band dual connectivity.

The UE shall be capable of handling a relative receive timing difference between the subframe timing of the signals received from any pair of the serving cells belonging to the same cell group according to the requirements in clause 7.9.2.

7.16 Proximity-based Services

7.16.1 Introduction

The requirements in this clause are applicable for UE performing transmissions and/or reception for ProSe Direct Discovery and/or ProSe Direct Communication in both RRC_IDLE and RRC_CONNECTED state. The ProSe requirements shall apply provided that the sidelink used by the UE for ProSe direct communication and/or ProSe direct discovery is on the carrier of the serving cell (RRC_IDLE) or PCell (RRC_CONNECTED).

7.16.2 Requirements

7.16.2.1 ProSe UE transmission timing

The requirements in this clause are applicable when the ProSe transmission timing is derived using the serving cell (RRC_IDLE) or PCell (RRC_CONNECTED) as reference. For ProSe transmission of sidelink channels and signals, UE shall have the capability to follow the timing change of the reference synchronization source.

7.16.2.1.1 Serving cell or PCell as timing reference

The requirements in this subclause are applicable when the reference timing used for ProSe transmissions is the serving cell (RRC_IDLE) or PCell (RRC_CONNECTED). The sidelink transmissions takes place $(N_{TA,SL} + N_{TA \text{ offset}}) \cdot T_s$ before the reception of the first detected path (in time) of the corresponding downlink frame from the reference cell, where $N_{TA \text{ offset}}$ is specified in Section 8.1 of [16]. The value of $N_{TA,SL}$ differs between sidelink channels and signals, and is either $N_{TA,SL} = N_{TA}$ or $N_{TA,SL} = 0$ as specified in Section 9.9 of [16].

7.16.2.1.1.1 Requirements when $N_{TA,SL} = 0$

For ProSe transmission of sidelink channels and signals employing $N_{\text{TA,SL}} = 0$, the requirements in Section 7.1 as specified for PRACH transmissions shall apply.

7.16.2.1.1.2 Requirements when $N_{TA.SL} = N_{TA}$

For ProSe transmission of sidelink channels and signals while employing $N_{\rm TA,SL} = N_{\rm TA}$, the requirements in Section 7.1 as specified for PUSCH shall apply.

When it is the first sidelink transmission in a DRX cycle, the requirements in Section 7.1 as specified for the first PUSCH transmission in a DRX cycle shall apply. The reference point for the UE initial transmit timing control requirement shall be $(N_{\text{TA},\text{SL_ref}} + N_{\text{TA offset}}) \cdot T_{\text{s}}$ seconds before the reception of the first detected path (in time) of the corresponding downlink frame from the reference cell. $(N_{\text{TA},\text{SL_ref}} + N_{\text{TA offset}})$ (in T_{s} units) for sidelink transmissions is the difference between UE transmission timing and the downlink timing immediately after when the last timing advance in Section 7.3 was applied.

When it is not the first sidelink transmission in a DRX cycle or there is no DRX cycle, the requirements as specified in Section 7.1 for PUSCH transmissions when the PUSCH transmission is not the first transmissions in a DRX cycle shall apply.

7.16.3 Interruptions with ProSe

This section contains the requirements related to the interruptions on PCell due ProSe Direct Discovery and ProSe Direct Communication. The requirements in this subclause are applicable only to ProSe on E-UTRA FDD bands.

When a UE capable of ProSe Direct Communication and/or ProSe Direct Discovery is configured with DRX and DRX is in use, interruptions specified in this section are not allowed while the *onDurationTimer*[17] is running.

7.16.3.1 Interruptions at ProSe Direct Discovery configuration

A UE capable of ProSe Direct Discovery may indicate its interest (initiation or termination) in ProSe Direct Discovery to the connected eNodeB using IE *SidelinkUEInformation* [2].

The UE is allowed an interruption of up to 1 subframe on PCell during the RRC reconfiguration procedure that includes the ProSe Direct Discovery configuration message *sl-DiscConfig* [2] (setup and release). This interruption is for both uplink and downlink of PCell.

7.16.3.2 Interruptions at ProSe Direct Communication configuration

A UE capable of ProSe Direct Communication may indicate its interest (initiation or termination) in ProSe Direct Communication to the connected eNodeB using IE *SidelinkUEInformation* [2].

The UE is allowed an interruption of up to 1 subframe on PCell during the RRC reconfiguration procedure that includes the ProSe Direct Communication configuration message *sl-CommConfig* [2] (setup and release). This interruption is for both uplink and downlink of PCell.

7.16.3.3 Interruptions during ProSe Direct Discovery

The UE is allowed an interruption of up to 1 subframe that is *N* subframes before and after a UL subframe configured for ProSe Direct Discovery by the eNodeB.

The value of N is ceil(w1/1ms) subframes when the parameter discSyncWindow[2] is configured with value w1 in the sidelink synchronization resource configuration associated with the ProSe Direct Discovery subframe.

The value of N is 1 subframe otherwise.

The interruptions are for both uplink and downlink of PCell. The interruption for the ProSe UE may occur:

- while switching a receiver chain ON/OFF for ProSe Direct Discovery if the UE has a dedicated receiver chain for discovery.

7.17 Maximum Transmission Timing Difference in Dual Connectivity

7.17.1 Introduction

A UE shall be capable of handling a relative transmission timing difference between subframe timing boundaries of the PCell and PSCell to be aggregated for E-UTRA FDD-FDD, E-UTRA-TDD-TDD, E-UTRA TDD-FDD dual connectivity.

7.17.2 Minimum Requirements for maximum transmission timing difference Inter-band Dual Connectivity

The UE shall be capable of handling a maximum uplink transmission timing difference between PCell and PSCell of at least $35.21~\mu s$ provided the UE indicates that it is capable of synchronous dual connectivity [2]. The requirements for synchronous dual connectivity are only applicable for TDD-TDD, FDD-FDD, and TDD-FDD inter-band dual connectivity.

The UE shall be capable of handling a maximum uplink transmission timing difference between PCell and PSCell of at least 500 µs provided the UE indicates that it is capable of asynchronous dual connectivity [2]. The requirements for asynchronous dual connectivity are only applicable for FDD-FDD and inter-band dual connectivity.

If the UE is configured with higher layer parameter

powerControlMode<1>, then the UE may stop transmission in the SCG if the UL transmission timing difference exceeds 35.21µs. If a UE supports both synchronous and asynchronous dual connectivity and if the UE is configured with higher layer parameter powerControlMode<2>, then the UE needs to constitute new subframes pair if the UL transmission timing difference exceeds 500µs.7.18 SCell Activation and Deactivation Delay for E-UTRA Dual Connectivity

7.18.1 Introduction

This section defines requirements for the delay within which the UE shall be able to activate a deactivated SCell and deactive an activated SCell in E-UTRA dual connectivity. The requirements are applicable to an E-UTRA dual connectivity capable UE which has been configured with one SCell in either MCG or SCG and PSCell. In case where the SCell belongs to SCG, the term PCell in clause 7.7 shall be replaced with PSCell. The requirements shall apply for E-UTRA FDD, E-UTRA TDD and E-UTRA TDD-FDD dual connectivity.

7.18.2 SCell Activation Delay Requirement for Deactivated SCell

The requirements in this clause shall apply for a UE configured with PSCell and one SCell.

The SCell activation delay shall meet the requirements in clause 7.7.2.

7.18.3 SCell Deactivation Delay Requirement for Activated SCell

The requirements in this clause shall apply for a UE configured with PSCell and one SCell.

The SCell deactivation delay shall meet the requirements in clause 7.7.3.

8 UE Measurements Procedures in RRC_CONNECTED State

8.1 General Measurement Requirements

8.1.1 Introduction

This clause contains requirements on the UE regarding measurement reporting in RRC_CONNECTED state. The requirements are split in E-UTRA intra frequency, E-UTRA inter frequency, Inter-RAT UTRA FDD, UTRA TDD and GSM measurements. These measurements may be used by the E-UTRAN, e.g. for handover decisions. The measurement quantities are defined in [4], the measurement model is defined in [22] and measurement accuracies are specified in clause 9. Control of measurement reporting is specified in TS 36.331 [2].

When the UE is provided with IDC solution, the UE shall also perform RRM measurements and meet the corresponding requirements in clause 8.

In the requirements of Section 8.1 for the UE capable of CA and the UE configured with up to four SCells, the applicable exceptions for side conditions are specified in Annex B, Sections B.4.2 and B.4.3, respectively.

In the requirements of Section 8.1 for the UE capable of DC and the UE configured with one PSCell, the applicable exceptions for side conditions are specified in Annex B, Sections B.4.2 and B.4.3, respectively.

The requirements in Section 9 are applicable for a UE performing measurements according to Section 8.1.

8.1.2 Requirements

8.1.2.1 UE measurement capability

If the UE requires measurement gaps to identify and measure inter-frequency and/or inter-RAT cells, in order for the requirements in the following subsections to apply the E-UTRAN must provide a single measurement gap pattern with constant gap duration for concurrent monitoring of all frequency layers and RATs.

During the measurement gaps the UE:

- shall not transmit any data
- is not expected to tune its receiver on any of the E-UTRAN carrier frequencies of PCell and any SCell.
- is not expected to tune its receiver on any of the E-UTRAN carrier frequencies of PCell, PSCell, and SCell.

If the UE supporting dual connectivity is configured with PSCell, during the total interruption time as shown in Figure 8.1.2.1-1, the UE shall not transmit and receive any data in SCG.

In the uplink subframe occurring immediately after the measurement gap,

- if the following conditions are met then it is up to UE implementation whether or not the UE can transmit data:
 - all the serving cells belong to E-UTRAN TDD;
 - if the subframe occurring immediately before the measurement gap is an uplink subframe.
- Otherwise the UE shall not transmit any data.

In determining the above UE behaviour in the uplink subframe occurring immediately after the measurement gap the UE shall treat a special subframe as an uplink subframe if the special subframe occurs immediately before the measurement gap, Inter-frequency and inter-RAT measurement requirements within this clause rely on the UE being configured with one measurement gap pattern unless the UE has signaled that it is capable of conducting such measurements without gaps. UEs shall only support those measurement gap patterns listed in Table 8.1.2.1-1 that are relevant to its measurement capabilities.

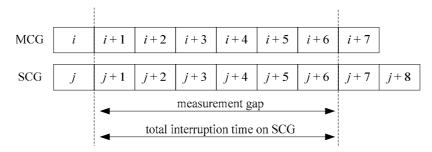
ProSe capable UE is allowed to perform ProSe transmissions during the measurement gaps that are not used for measurements if the requirements specified in section 8 for inter-frequency and inter-RAT measurements are fulfilled.

Table 8.1.2.1-1: Gap Pattern Configurations supported by the UE

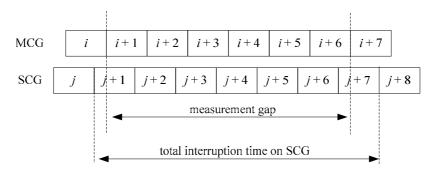
Gap Pattern Id	MeasurementGap Length (MGL, ms)	Measurement Gap Repetition Period (MGRP, ms)	Minimum available time for inter-frequency and inter-RAT measurements during 480ms period (Tinter1, ms)	Measurement Purpose
0	6	40	60	Inter-Frequency E-UTRAN FDD and TDD, UTRAN FDD, GERAN, LCR TDD, HRPD, CDMA2000 1x
1	6	80	30	Inter-Frequency E-UTRAN FDD and TDD, UTRAN FDD, GERAN, LCR TDD, HRPD, CDMA2000 1x

NOTE 1: When inter-frequency RSTD measurements are configured and the UE requires measurement gaps for performing such measurements, only Gap Pattern 0 can be used. For defining the inter-frequency and inter-RAT requirements T_{inter1}=30ms shall be assumed.

- NOTE 2: A measurement gap starts at the end of the latest subframe occurring immediately before the measurement gap among MCG serving cells subframes.
- NOTE 3: MGL is the time from start of tuning to end of retuning, which is aligned between MCG and SCG.
- NOTE 4: The total interruption time on SCG is 6 subframes for synchronous dual connectivity, and the total interruption time on SCG is 7 subframes for asyncrhonous dual connectivity. As shown in Figure 8.1.2.1-1, MCG subframes from i+1 to i+6 are included in total interruption time together with SCG subframes from j+1 to j+6 for synchronous dual connectivity and j+1 to j+7 for asyncrhonous dual connectivity.
- NOTE 5: For asynchronous dual connectivity as shown in Figure 8.1.2.1-1 (b), subframe j is regarded as the subframe occurring immediately before the measurement gap for SCG, similarly, subframe j+8 is regarded as the subframe occurring immediately after the measurement gap for SCG.



(a) measurement GAP for synchronous dual connectivity



(b) measurement GAP for asynchronous dual connectivity

Figure 8.1.2.1-1: Measurement GAP and total interruption time on MCG and SCG

A UE that is capable of identifying and measuring inter-frequency and/or inter-RAT cells without gaps shall follow requirements as if Gap Pattern Id #0 had been used and the minimum available time Tinter1 of 60 ms shall be assumed for the corresponding requirements.

If the UE supporting E-UTRA carrier aggregation when configured with up to four SCCs is performing measurements on cells on PCC, inter-frequency measurements, or inter-RAT measurements, and interruption occurs on PCell or any activated SCell or both due to measurements performed on cells on an SCC with a deactivated SCell according to section 8.3, then the UE shall meet the requirements specified for each measurement in Section 8 and Section 9.

If the UE supporting E-UTRA dual connectivity when configured with a PSCell is performing measurements on cells on PCC, inter-frequency measurements, or inter-RAT measurements, then the UE shall meet the requirements specified for each measurement in Section 8 and Section 9.

A UE which indicate support for Increased UE carrier monitoring E-UTRA according to the capabilities in [2, 31] and which is capable of identifying and measuring inter-frequency and/or inter-RAT cells without gaps, shall be able to monitor maximum number of layers as defined in 8.1.2.1.1.1a, and apply the *MeasScaleFactor* [2] defining the relaxation to the requirements for the configured carriers according to section 8.1.2.1.1a.

8.1.2.1.1 Monitoring of multiple layers using gaps

When monitoring of multiple inter-frequency E-UTRAN and inter-RAT (UTRAN, GSM) using gaps (or without using gaps provided the UE supports such capability) is configured, the UE shall be capable of performing one measurement of the configured measurement type (RSRP, RSRQ, RSTD, UTRAN TDD P-CCPCH RSCP, UTRAN FDD CPICH measurements, GSM carrier RSSI, etc.) of detected cells on all the layers

The effective total number of frequencies excluding the frequencies of the PCell, SCells, and PSCell being monitored is N_{freq} , which is defined as:

$$N_{freq} = N_{freq, E-UTRA} + N_{freq, UTRA} + M_{gsm} + N_{freq, cdma2000} + N_{freq, HRPD}$$

where

 $N_{\text{freq, E-UTRA}}$ is the number of E-UTRA carriers being monitored (FDD and TDD)

N_{freq, UTRA} is the number of UTRA carriers being monitored (FDD and TDD)

 M_{GSM} is an integer which is a function of the number of GSM carriers on which measurements are being performed. M_{GSM} is equal to 0 if no GSM carrier is being monitored. For a MGRP of 40 ms, M_{GSM} is equal to 1 if cells on up to 32 GSM carriers are being measured. For a MGRP of 80 ms, M_{GSM} is equal to ceil($N_{carriers,GSM}$ /20) where $N_{carriers,GSM}$ is the number of GSM carriers on which cells are being measured.

 $N_{\text{freq. cdma}2000}$ is the number of cdma2000 1x carriers being monitored.

N_{freq, HRPD} is the number of HRPD carriers being monitored.8.1.2.1.1.1 Maximum allowed layers for multiple monitoring

The UE shall be capable of monitoring at least per RAT group:

- Depending on UE capability, 3 FDD E-UTRA inter-frequency carriers, and
- Depending on UE capability, 1 FDD E-UTRA inter-frequency carrier for RSTD measurements, and
- Depending on UE capability, 3 TDD E-UTRA inter-frequency carriers, and
- Depending on UE capability, 1 TDD E-UTRA inter-frequency carrier for RSTD measurements, and
- Depending on UE capability, 3 FDD UTRA carriers, and
- Depending on UE capability, 3 TDD UTRA carriers, and
- Depending on UE capability, 32 GSM carriers (one GSM layer corresponds to 32 carriers), and
- Depending on UE capability, 5 cdma2000 1x carriers, and
- Depending on UE capability, 5 HRPD carriers

In addition to the requirements defined above, the UE shall be capable of monitoring a total of at least 7 effective carrier frequency layers comprising of any above defined combination of E-UTRA FDD, E-UTRA TDD, UTRA FDD, UTRA TDD, GSM (one GSM layer corresponds to 32 carriers), cdma2000 1x and HRPD layers.

8.1.2.1.1.1a Maximum allowed layers for multiple monitoring (Increased UE carrier monitoring)

UE which indicate support for Increased UE carrier monitoring E-UTRA according to the capabilities in [2,31] shall be capable of monitoring at least

- Depending on UE capability, 8 FDD E-UTRA inter-frequency carriers, and
- Depending on UE capability, 8 TDD E-UTRA inter-frequency carriers

UE which indicate support for increased UE carrier monitoring UTRA according to the capabilities in [2,31] shall be capable of monitoring at least

- Depending on UE capability, 6 FDD UTRA carriers, and

- Depending on UE capability, 7 TDD UTRA carriers, and

In addition to the requirements defined above, the UE which indicate support for Increased UE carrier monitoring E-UTRA or increased UE carrier monitoring UTRA according to the capabilities in [2,31]shall be capable of monitoring a total of at least 12 carrier frequency layers comprising of any above defined combination of E-UTRA FDD, E-UTRA TDD, UTRA TDD, UTRA TDD, GSM (one GSM layer corresponds to 32 carriers), cdma2000 1x and HRPD layers

The minimum performance requirements for a UE which does not indicate support for Increased UE carrier monitoring E-UTRA [2,31] are calculated assuming all E-UTRA carriers which the UE is required to monitor, are having normal performance, i.e. $N_{freq, E-UTRA, reduced} = 0$. The minimum performance requirements for a UE which does not indicate support for Increased UE carrier monitoring UTRA [2,31] are calculated assuming all UTRA carriers which the UE is required to monitor, are having normal performance, i.e. $N_{freq, UTRA, reduced} = 0$. Capabilities for number of carriers to monitor for UE which do not support increased carrier monitoring E-UTRA or increased carrier monitoring UTRA are specified in section 8.1.2.1.1.1. A UE which do not indicate support for Increased UE carrier monitoring E-UTRA or UTRAN [2,31] does not have any reduced performance carrier requirements and $K_n=1$.

8.1.2.1.1a Monitoring of multiple layers using gaps (Increased UE carrier monitoring)

For UE which support increased carrier monitoring E-UTRA or increased carrier monitoring UTRA, the measurement performance for different carriers may be configured by higher layers to be either normal or reduced performance. A measurement scaling factor, *MeasScaleFactor* [2], defining the relaxation to be applied to the requirements for carriers measured with reduced measurement performance is signalled by higher layers and has the possible settings shown in table 8.1.2.1.1-1.

MeasScaleFactor | K_n | K_r information element settting

Table 8.1.2.1.1-1: Measurement Scaling factor Configurations supported by the UE

SI DOTAT CIT	O	0/ /	O
sf-EUTRA-cf2	16	16/15	16

If no reduced performance group carrier is configured, the UE shall consider all carriers to have normal performance

If no *MeasScaleFactor* is configured, a UE indicating support for increased carrier monitoring E-UTRA or increased carrier monitoring UTRA shall monitor at least the number of carriers specified in section 8.1.2.1.1.1 and is not required to monitor the increased number of carriers specified in section 8.1.2.1.1.1a.

The following definitions are used in the performance requirements:

$$N_{freq} = N_{freq,n} + N_{freq,r}$$

ef_FIJTR A_cf1

Where:

 $N_{\text{freq},n} = N_{\text{freq}, \text{ E-UTRA}, \text{normal}} + N_{\text{freq}, \text{ UTRA}, \text{ normal}} + M_{\text{gsm}} + N_{\text{freq}, \text{ cdma2000}} + N_{\text{freq}, \text{ HRPD}} : \text{Total number of interfrequency carriers to be monitored with normal measurement performance}$

 $N_{\text{freq,r}} = N_{\text{freq, E-UTRA, reduced}} + N_{\text{freq, UTRA, reduced}}$: Total number of interfrequency carriers to be monitored with reduced measurement performance

Where:

N_{freq. E-UTRA,normal}: Number of interfrequency carriers to be monitored with normal performance

N_{freq. E-UTRA.reduced}: Number of interfrequency carriers to be monitored with reduced performance

N_{freq, UTRA, normal}: Number of UTRA carriers (FDD and TDD) to be monitored with normal performance

 $N_{\text{freq, UTRA, reduced}}$: Number of UTRA carriers (FDD and TDD) to be monitored with reduced performance

For interfrequency carriers, if $N_{\text{freq, E-UTRA,reduced}}$ is not equal to zero then K_n and K_r are as shown in table 8.1.2.1.1-1. Otherwise K_n =1 and all interfrequency layers have normal performance.

For UTRAN carriers, if $N_{freq,\ UTRA,reduced}$ is not equal to zero then K_n and K_r are as shown in table 8.1.2.1.1-1. Otherwise K_n =1 and all UTRA frequency layers have normal performance.

The minimum performance requirements for a UE which indicates support for Increased UE carrier monitoring E-UTRA [2, 31] are calculated as defined in sections 8.1.2.3.1 and 8.1.2.3.2 provided that $N_{\text{freq, E-UTRA, normal}} \leq 3$ or if $N_{\text{freq,n=}}$ N_{freq} . The minimum perforformance requirements for a UE which indicates support for Increased UE carrier monitoring UTRA [2, 31] are calculated as defined in sections 8.1.2.4.1, 8.1.2.4.3, 8.1.2.4.7 and 8.1.2.4.13 provided that $N_{\text{freq, UTRA, normal}} \leq 3$ or if $N_{\text{freq,n=}}$ N_{freq} . Capabilities for number of carriers to monitor for a UE which supports Increased carrier monitoring E-UTRA or Increased carrier monitoring UTRA are specified in section 8.1.2.1.1.1a.

8.1.2.2 E-UTRAN intra frequency measurements

The UE shall be able to identify new intra-frequency cells and perform RSRP, RSRQ, and RS-SINR measurements of identified intra-frequency cells without an explicit intra-frequency neighbour cell list containing physical layer cell identities. During the RRC_CONNECTED state the UE shall continuously measure identified intra frequency cells and additionally search for and identify new intra frequency cells.

8.1.2.2.1 E-UTRAN FDD intra frequency measurements

8.1.2.2.1.1 E-UTRAN intra frequency measurements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable FDD intra frequency cell within

$$T_{\text{identify intra}} = T_{\text{basic_identify_E-UTRA_FDD, intra}} \cdot \frac{T_{\text{Measurement_Period, Intra}}}{T_{\text{Intra}}} \quad \textit{ms}$$

where

T_{basic identify E-UTRA FDD, intra} is 800 ms

A cell shall be considered detectable when

- RSRP related side conditions given in Sections 9.1.2.1 and 9.1.2.2 are fulfilled for a corresponding Band,
- RSRQ related side conditions given in Clause 9.1.5.1 are fulfilled for a corresponding Band,
- RS-SINR related side conditions given in Section 9.1.17.2.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.1 for a corresponding Band.

 T_{Intra} : This is the minimum time that is available for intra frequency measurements, during the measurement period with an arbitrarily chosen timing. Time is assumed to be available for performing intra frequency measurements whenever the receiver is guaranteed to be active on the intra frequency carrier.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period\ Intra}$. If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is 200 ms. When no measurement gaps are activated, the UE shall be capable of performing RSRP, RSRQ, and RS-SINR measurements for 8 identified-intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When measurement gaps are activated the UE shall be capable of performing measurements for at least $Y_{\text{measurement intra}}$ cells , where $Y_{\text{measurement intra}}$ is defined in the following equation. If the UE has identified more than $Y_{\text{measurement intra}}$ cells, the UE shall perform measurements of at least 8 identified intra- frequency cells but the reporting rate of RSRP, RSRQ, and RS-SINR measurements of cells from UE physical layer to higher layers may be decreased.

$$\mathbf{Y}_{\text{measurement intra}} = Floor \left\{ X_{\text{basic measurement FDD}} \cdot \frac{\mathbf{T}_{\text{Intra}}}{\mathbf{T}_{\text{Measurement_Period, Intra}}} \right\} \text{cells}$$

where

 $X_{\text{basic measurement FDD}} = 8 \text{ (cells)},$

 $T_{Measurement_Period, Intra} = 200 \text{ ms}$ is the measurement period for intra frequency RSRP, RSRQ, and RS-SINR measurements.

The RSRP measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.2.1 and 9.1.2.2, the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.5.1, and RS-SINR measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.17.2.1.

8.1.2.2.1.1.1 Measurement Reporting Requirements

8.1.2.2.1.1.1 Periodic Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.2.1, 9.1.2.2, 9.1.5.1, and 9.1.17.2.1, respectively.

8.1.2.2.1.1.1.2 Event-triggered Periodic Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.2.1, 9.1.2.2, 9.1.5.1, and 9.1.17.2.1, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.2.1.1.1.3.

8.1.2.2.1.1.1.3 Event Triggered Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.2.1, 9.1.2.2, 9.1.5.1, and 9.1.17.2.1, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T $_{identify\ intra}$ defined in Clause 8.1.2.2.1.1. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra}$ defined in clause 8.1.2.2.1.1 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period, Intra}$ provided the timing to that cell has not changed more than ± 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

8.1.2.2.1.2 E-UTRAN intra frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable FDD intra frequency cell within $T_{identify_intra}$ as shown in table 8.1.2.2.1.2-1

Table 8.1.2.2.1.2-1: Requirement to identify a newly detectable FDD intrafrequency cell

DRX cycle length (s)	T _{identify_intra} (s) (DRX cycles)				
≤0.04	0.8 (Note1)				
0.04 <drx-< td=""><td>Note2 (40)</td></drx-<>	Note2 (40)				
cycle≤0.08					
0.128	3.2 (25)				
0.128 <drx-< td=""><td>Note2(20)</td></drx-<>	Note2(20)				
cycle≤2.56					
Note1: Number of DRX cycle					
	the DRX cycle in use epends upon the DRX				

cycle in use

A cell shall be considered detectable when

- RSRP related side conditions given in Sections 9.1.2.1 and 9.1.2.2 are fulfilled for a corresponding Band,
- RSRQ related side conditions given in Clause 9.1.5.1 are fulfilled for a corresponding Band,
- RS-SINR related side conditions given in Section 9.1.17.2.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.1 for a corresponding Band.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{measure_intra}$ as shown in table 8.1.2.2.1.2-2. The UE shall be capable of performing RSRP, RSRQ, and RS-SINR measurements for 8 identified-intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_intra}$.

Table 8.1.2.2.1.2-2: Requirement to measure FDD intrafrequency cells

DRX cycle length (s)	T _{measure_intra} (s) (DRX cycles)			
≤0.04	0.2 (Note1)			
0.04 <drx-< td=""><td>Note2 (5)</td></drx-<>	Note2 (5)			
cycle≤2.56				
Note1: Number of DRX cycle				
depends upon the DRX cycle in use				
Note2: Time depends upon the DRX				
cyc	cle in use			

The RSRP measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.2.1 and 9.1.2.2, the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.5.1, and RS-SINR measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.17.2.1.

8.1.2.2.1.2.1 Measurement Reporting Requirements

8.1.2.2.1.2.1.1 Periodic Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.2.1, 9.1.2.2, 9.1.5.1, and 9.1.17.2.1, respectively.

8.1.2.2.1.2.1.2 Event-triggered Periodic Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.2.1, 9.1.2.2, 9.1.5.1, and 9.1.17.2.1, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.2.1.2.1.3.

8.1.2.2.1.2.1.3 Event Triggered Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.2.1, 9.1.2.2, 9.1.5.1, and 9.1.17.2.1, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T _{identify_intra} defined in Clause 8.1.2.2.1.2. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra}$ defined in clause 8.1.2.2.1.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_intra}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

8.1.2.2.2 E-UTRAN TDD intra frequency measurements

8.1.2.2.2.1 E-UTRAN intra frequency measurements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable TDD intra frequency cell within

$$T_{\text{identify intra}} = T_{\text{basic identify }\textit{E-UTRA_TDD, intra}} \cdot \frac{T_{\text{Measurement Period, Intra}}}{T_{\text{Intra}}} \quad \textit{ms}$$

where

T_{basic_identify_E-UTRA_TDD, intra} is 800 ms

A cell shall be considered detectable when

- RSRP related side conditions given in Sections 9.1.2.1 and 9.1.2.2 are fulfilled for a corresponding Band,
- RSRQ related side conditions given in Clause 9.1.5.1 are fulfilled for a corresponding Band,
- RS-SINR related side conditions given in Section 9.1.17.2.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.1 for a corresponding Band.

 T_{Intra} : This is the minimum time that is available for intra frequency measurements, during the measurement period with an arbitrarily chosen timing. Time is assumed to be available for performing intra frequency measurements whenever the receiver is guaranteed to be active on the intra frequency carrier.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period\ Intra}$. If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is 200 ms. When no measurement gaps are activated, the UE shall be capable of performing RSRP, RSRQ, and RS-SINR measurements for 8 identified-intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When measurement gaps are activated the UE shall be capable of performing measurements for at least $Y_{\text{measurement intra}}$ cells , where $Y_{\text{measurement intra}}$ is defined in the following equation. If the UE has identified more than $Y_{\text{measurement intra}}$ cells, the UE shall perform measurements of at least 8 identified intra-frequency

cells but the reporting rate of RSRP, RSRQ, and RS-SINR measurements of cells from UE physical layer to higher layers may be decreased.

$$\mathbf{Y}_{\text{measurement intra}} = Floor \left\{ X_{\text{basic measurement TDD}} \cdot \frac{\mathbf{T}_{\text{Intra}}}{\mathbf{T}_{\text{Measurement_Period, Intra}}} \right\} \text{cells}$$

where

 $X_{\text{basic measurement TDD}} = 8 \text{ (cells)},$

 $T_{Measurement_Period\ Intra} = 200\ ms$ is the measurement period for intra frequency RSRP, RSRQ, and RS-SINR measurements.

The RSRP measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.2.1 and 9.1.2.2, the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.5.1, and RS-SINR measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.17.2.1.

8.1.2.2.2.1.1 Measurement Reporting Requirements

8.1.2.2.2.1.1.1 Periodic Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.2.1, 9.1.2.2, 9.1.5.1, and 9.1.17.2.1, respectively.

8.1.2.2.2.1.1.2 Event-triggered Periodic Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.2.1, 9.1.2.2, 9.1.5.1, and 9.1.17.2.1, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.2.2.1.1.3.

8.1.2.2.2.1.1.3 Event Triggered Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.2.1, 9.1.2.2, 9.1.5.1, and 9.1.17.2.1, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times \text{TTI}_{\text{DCCH}}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T $_{identify\ intra}$ defined in Clause 8.1.2.2.2.1. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra}$ defined in clause 8.1.2.2.2.1 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period\ Intra}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

8.1.2.2.2.2 E-UTRAN intra frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable TDD intra frequency cell within $T_{identify_intra}$ as shown in table 8.1.2.2.2.2-1

Table 8.1.2.2.2.2-1: Requirement to identify a newly detectable TDD intrafrequency cell

DRX cycle length (s)	T _{identify_intra} (s) (DRX cycles)
≤0.04	0.8 (Note1)
0.04 <drx-< td=""><td>Note2 (40)</td></drx-<>	Note2 (40)
cycle≤0.08	
0.128	3.2 (25)
0.128 <drx-< td=""><td>Note2(20)</td></drx-<>	Note2(20)
cycle≤2.56	

Note1: Number of DRX cycle depends upon the DRX cycle in use Note2: Time depends upon the DRX cycle in use

A cell shall be considered detectable when

- RSRP related side conditions given in Clause 9.1.2.1 and 9.1.2.2 are fulfilled for a corresponding Band,
- RSRQ related side conditions given in Clause 9.1.5.1 are fulfilled for a corresponding Band,
- RS-SINR related side conditions given in Clause 9.1.17.2.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.1 for a corresponding Band.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{measure_intra}$ as shown in table 8.1.2.2.2.2-2. The UE shall be capable of performing RSRP, RSRQ, and RS-SINR measurements for 8 identified intra-frequency cells and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_intra}$.

Table 8.1.2.2.2.2: Requirement to measure TDD intra frequency cells

DRX cycle length (s)	T _{measure_intra} (s) (DRX cycles)		
≤0.04	0.2 (Note1)		
0.04 <drx-< td=""><td>Note2 (5)</td></drx-<>	Note2 (5)		
cycle≤2.56			
Note1: Number of DRX cycle			
depends upon the			
	RX cycle in use.		

Note2: Time depends upon the DRX cycle in use.

The RSRP measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.2.1 and 9.1.2.2, the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.5.1, and the RS-SINR measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.17.2.1.

8.1.2.2.2.1 Measurement Reporting Requirements

8.1.2.2.2.1.1 Periodic Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.2.1, 9.1.2.2, 9.1.5.1, and 9.1.17.2.1, respectively.

8.1.2.2.2.1.2 Event-triggered Periodic Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.2.1, 9.1.2.2, 9.1.5.1, and 9.1.17.2.1, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.2.2.2.1.3.

8.1.2.2.2.1.3 Event Triggered Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.2.1, 9.1.2.2, 9.1.5.1, and 9.1.17.2.1, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times \text{TTI}_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T $_{identify_intra}$ defined in Clause 8.1.2.2.2.2. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra}$ defined in clause 8.1.2.2.2.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_intra}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

8.1.2.2.3 E-UTRAN FDD intra frequency measurements with autonomous gaps

8.1.2.2.3.1 Identification of a new CGI of E-UTRA cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose 'reportCGI'. The UE may make autonomous gaps in downlink reception and uplink transmission for receiving MIB and SIB1 message according to clause 5.5.3.1 of TS 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or not, or whether SCell(s) are configured or not, the UE shall be able to identify a new CGI of E-UTRA cell within:

$$T_{\text{identify CGI, intra}} = T_{\text{basic identify CGI, intra}}$$
 ms

Where

 $T_{basic_identify_CGI, intra} = 150$ ms. This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of an E-UTRA cell is defined, provided that the E-UTRA cell has been already identified by the UE.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in Clause 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.2 for a corresponding Band

The MIB of an E-UTRA cell whose CGI is identified shall be considered decodable by the UE provided the PBCH demodulation requirements are met according to [5].

The requirement for identifying a new CGI of an E-UTRA cell within $T_{basic_identify_CGI,intra}$ is applicable when no DRX is used as well as when all the DRX cycles specified in TS 36.331 [2] are used.

Within the time, $T_{identify_CGI, intra}$ ms, over which the UE identifies the new CGI of E-UTRA cell, the UE shall transmit at least 60 ACK/NACKs on PCell or each of activated SCell(s), provided that:

- there is continuous DL data allocation,
- no DRX cycle is used,
- no measurement gaps are configured,
- only one code word is transmitted in each subframe,
- no MBSFN subframes are configured in the PCell or each of activated SCell(s).

8.1.2.2.3.2 ECGI Reporting Delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle. If IDC autonomous denial is configured, an additional delay can be expected.

8.1.2.2.4 E-UTRAN TDD intra frequency measurements with autonomous gaps

8.1.2.2.4.1 Identification of a new CGI of E-UTRA cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose 'reportCGI'. The UE may make autonomous gaps in downlink reception and uplink transmission for receiving MIB and SIB1 messages according to clause 5.5.3.1 of TS 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or not, or whether SCell(s) are configured or not, the UE shall be able to identify a new CGI of E-UTRA cell within:

$$T_{\text{identify_CGI, intra}} = T_{\text{basic_identify_CGI, intra}}$$
 ms

Where

 $T_{basic_identify_CGI, intra} = 150$ ms. This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of an E-UTRA cell is defined, provided that the E-UTRA cell has been already identified by the UE.

A cell shall be considered identifiable when the following conditions are fulfilled:

- RSRP related side conditions given in Clause 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.2 for a corresponding Band

The MIB of an E-UTRA cell whose CGI is identified shall be considered decodable by the UE provided the PBCH demodulation requirements are met according to [5].

The requirement for identifying a new CGI of an E-UTRA cell within $T_{basic_identify_CGI, intra}$ is applicable when no DRX is used as well as when all the DRX cycles specified in TS 36.331 [2] are used.

Within the time, $T_{identify_CGI, intra}$ ms, over which the UE identifies the new CGI of E-UTRA cell, the UE shall be able to transmit at least the number of ACK/NACKs stated in Table 8.1.2.2.4.1-1 on PCell or each of activated SCell(s), provided that:

- there is continuous DL data allocation,
- no DRX cycle is used,
- no measurement gaps are configured,

- only one code word is transmitted in each subframe,
- no MBSFN subframes are configured in the PCell or each of activated SCell(s).

Table 8.1.2.2.4.1-1: Requirement on minimum number of ACK/NACKs to transmit during $T_{basic_identify_CGI, intra}$.

UL/DL configuration	Minimum number of transmitted ACK/NACKs		
0 (Note 1)	18		
1	35		
2	43		
3	36		
4	39		
5	42		
6	30		
Note 1: When a UE is	IE is configured with EIMTA-		

Note 1: When a UE is configured with EIMTA-MainConfigServCell via RRC signalling [2] only this requirement shall apply.

8.1.2.2.4.2 ECGI Reporting Delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle. If IDC autonomous denial is configured, an additional delay can be expected.

8.1.2.3 E-UTRAN inter frequency measurements

The UE shall be able to identify new inter-frequency cells and perform RSRP, RSRQ, and RS-SINR measurements of identified inter-frequency cells if carrier frequency information is provided by the PCell, even if no explicit neighbour list with physical layer cell identities is provided.

8.1.2.3.1 E-UTRAN FDD – FDD inter frequency measurements

8.1.2.3.1.1 E-UTRAN FDD – FDD inter frequency measurements when no DRX is used

When measurement gaps are scheduled, or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new FDD inter-frequency within $T_{Identify\ Inter}$ according to the following expression:

$$\mathbf{T}_{\text{Identify_Inter}} = \mathbf{T}_{\text{Basic_Identify_Inter}} \cdot \frac{480}{\mathbf{T}_{\text{Interl}}} \cdot N_{\textit{freq},n} \cdot K_{n} \quad \textit{ms} \text{ (normal performance) and } \mathbf{T}_{\text{Interl}} \cdot \mathbf{T}_{\text{Interl}}$$

$$T_{\text{Identify_Inter}} = T_{\text{Basic_Identify_Inter}} \cdot \frac{480}{T_{\text{Inter}}} \cdot N_{freq,r} \cdot K_r \quad \textit{ms} \, (\text{reduced performance})$$

Where:

 $T_{Basic_Identify_Inter} = 480$ ms. It is the time period used in the inter frequency equation where the maximum allowed time for the UE to identify a new FDD inter-frequency cell is defined.

 $N_{\text{freq,n}} \, N_{\text{freq,r}} \, K_n$ and K_r are defined in clause 8.1.2.1.1 and T_{inter1} is defined in clause 8.1.2.1

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP|dBm and RSRP Ês/Iot according to Annex B.2.3 for a corresponding Band,
- other RSRP related side conditions given in Sections 9.1.3.1 and 9.1.3.2 are fulfilled for a corresponding Band,

- RSRQ related side conditions given in Sections 9.1.6.1 and 9.1.6.2 are fulfilled for a corresponding Band,
- RS-SINR related side conditions given in Sections 9.1.17.3.1 and 9.1.17.3.2 are fulfilled for a corresponding Band,
- SCH_RP|_{dBm} and SCH Ês/Iot according to Annex B.2.3 for a corresponding Band.

When measurement gaps are scheduled for FDD inter frequency measurements, or the UE supports capability of conducting such measurements without gaps, the UE physical layer shall be capable of reporting RSRP, RSRQ, and RS-SINR measurements to higher layers with measurement accuracy as specified in sub-clauses 9.1.3.1, 9.1.3.2, 9.1.6.1, 9.1.6.2, 9.1.17.3.1 and 9.1.17.3.2, respectively, with measurement period given by table 8.1.2.3.1.1-1.

Table 8.1.2.3.1.1-1: Measurement period and measurement bandwidth

Configuration	Physical Layer Measurement period: T _{Measurement_Period_Inter_FDD} [ms] (normal performance)	Physical Layer Measurement period: T _{Measurement_Period_Inter_FDD} [ms] (reduced performance)	Measurement bandwidth [RB]
	$480 \times K_n \times N_{freq,n}$	$480 \times K_r \times N_{freq,r}$	6
0			
1 (Note)	$240 \times K_n \times N_{freq,n}$	240 x K _r x N _{freq,r}	50
Note: This configu	ration is optional		

The UE shall be capable of performing RSRP, RSRQ, and RS-SINR measurements of at least 4 inter-frequency cells per FDD inter-frequency for up to 3 FDD inter-frequencies or 8 FDD interfrequencies if the UE supports Increased UE carrier monitoring E-UTRA and the UE physical layer shall be capable of reporting RSRP, RSRQ, and RS-SINR measurements to higher layers with the measurement period defined in Table 8.1.2.3.1.1-1.

8.1.2.3.1.1.1 Measurement Reporting Requirements

8.1.2.3.1.1.1 Periodic Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.3.1, 9.1.3.2, 9.1.6.1, 9.1.6.2, 9.1.17.3.1 and 9.1.17.3.2, respectively.

8.1.2.3.1.1.1.2 Event-triggered Periodic Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.3.1, 9.1.3.2, 9.1.6.1, 9.1.6.2, 9.1.17.3.1 and 9.1.17.3.2, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.3.1.1.1.3.

8.1.2.3.1.1.1.3 Event Triggered Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.3.1, 9.1.3.2, 9.1.6.1, 9.1.6.2, 9.1.17.3.1 and 9.1.17.3.2, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH . The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T $_{identify - inter}$ defined in clause 8.1.2.3.1.1. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_inter}$ defined in clause 8.1.2.3.1.1 and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_Inter_FDD}$ defined in clause 8.1.2.3.1.1 provided the timing to that cell has not changed more than \pm 50 Ts while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

8.1.2.3.1.2 E-UTRAN FDD – FDD inter frequency measurements when DRX is used

When DRX is in use, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new detectable E-UTRAN FDD inter frequency cell within $T_{identify\ inter}$ as shown in table 8.1.2.3.1.2-1

Table 8.1.2.3.1.2-1: Requirement to identify a newly detectable FDD interfrequency cell

DRX cycle	T _{identify_inter} (s) (DRX cycles), normal performance		T _{identify_inter} (s) (DRX cycles), reduced performance		
length (s)	Gap period =	Gap period =	Gap period = 40	Gap period =	
	40 ms	80 ms	ms	80 ms	
≤0.16	Non DRX	Non DRX	Non DRX	Non DRX	
	Requirements in	Requirements in	Requirements in	Requirements in	
	clause 8.1.2.3.1.1	clause 8.1.2.3.1.1	clause 8.1.2.3.1.1	clause 8.1.2.3.1.1	
	are applicable	are applicable	are applicable	are applicable	
0.256	$5.12*K_n*N_{freq,n}$	$7.68*K_n*N_{freq,n}$	$5.12*K_r*N_{freq,r}$	$7.68*K_r*N_{freq,r}$	
	$(20*K_n*N_{freq,n})$	$(30*K_n *N_{freq,n})$	$(20*K_r*N_{freq,r})$	$(30*K_r*N_{freq,r})$	
0.32	6.4*K _n *N _{freq,n}	7.68*K _n *N _{freq,nl}	$6.4*K_r*N_{freq,r}$	7.68*K _r *N _{freq,r}	
	$(20*K_n *N_{freq,n})$	(24*K _n *N _{freq,n})	$(20*K_r*N_{freq,r})$	$(24*K_r*N_{freq,r})$	
0.32<	Note (20*K _n	Note (20*K _n	Note (20*K _r	Note (20*K _r	
DRX-	*N _{freq,n})	*N _{freq,n})	*N _{freg.r})	*N _{freg,r})	
cycle≤2.56		04,)	04,,,	54,17	
Note: Time depends upon the DRX cycle in use					

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP_{dBm} and RSRP Ês/Iot according to Annex B.2.3 for a corresponding Band,
- other RSRP related side conditions given in Clause 9.1.3.1 and 9.1.3.2 are fulfilled for a corresponding Band,
- RSRQ related side conditions given in Sections 9.1.6.1 and 9.1.6.2 are fulfilled for a corresponding Band,
- RS-SINR related side conditions given in Sections 9.1.17.3.1 and 9.1.17.3.2 are fulfilled for a corresponding Band,
- SCH_RP|_{dBm} SCH Ês/Iot according to Annex B.2.3 for a corresponding Band.

The UE shall be capable of performing RSRP, RSRQ, and RS-SINR measurements of at least 4 inter-frequency cells per FDD inter-frequency and the UE physical layer shall be capable of reporting RSRP, RSRQ, and RS-SINR measurements to higher layers with the measurement period defined in table 8.1.2.3.1.2-2 when DRX is in use, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps.

Table 8.1.2.3.1.2-2: Requirement to measure FDD interfrequency cells

DRX cycle length (s)	T _{measure_inter} (s) (DRX cycles) (normal performance)	T _{measure_inter} (s) (DRX cycles) (reduced performance)			
≤0.08	Non DRX	Non DRX			
	Requirements in	Requirements in			
	clause 8.1.2.3.1.1	clause 8.1.2.3.1.1			
	are applicable	are applicable			
0.08 <drx-< td=""><td>Note (5*K_n*N_{freq,n})</td><td>Note (5*K_r*N_{freq,r})</td></drx-<>	Note (5*K _n *N _{freq,n})	Note (5*K _r *N _{freq,r})			
cycle≤2.56	·	, , , , , , , , , , , , , , , , , , ,			
Note: Time depends upon the DRX cycle in use					

The RSRP measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.3.1 and 9.1.3.2, the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.6.1 and 9.1.6.2, and the RS-SINR measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.17.3.1 and 9.1.17.3.2.

8.1.2.3.1.2.1 Measurement Reporting Requirements

8.1.2.3.1.2.1.1 Periodic Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.3.1, 9.1.3.2, 9.1.6.1, 9.1.6.2, 9.1.17.3.1 and 9.1.17.3.2, respectively.

8.1.2.3.1.2.1.2 Event-triggered Periodic Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.3.1, 9.1.3.2, 9.1.6.1, 9.1.6.2, 9.1.17.3.1 and 9.1.17.3.2, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.3.1.2.1.3.

8.1.2.3.1.2.1.3 Event Triggered Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.3.1, 9.1.3.2, 9.1.6.1, 9.1.6.2, 9.1.17.3.1 and 9.1.17.3.2, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_inter}$ defined in clause 8.1.2.3.1.2. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_inter}$ defined in clause 8.1.2.3.1.2 and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{measure_inter}$ defined in clause 8.1.2.3.1.2 provided the timing to that cell has not changed more than \pm 50 Ts while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

8.1.2.3.2 E-UTRAN TDD – TDD inter frequency measurements

8.1.2.3.2.1 E-UTRAN TDD – TDD inter frequency measurements when no DRX is used

When measurement gaps are scheduled, or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new TDD inter-frequency within $T_{Identify_Inter}$ according to the following expression:

- When configuration 0 or configuration 1 in Table 8.1.2.3.2.1-1 is applied,

$$T_{\text{Identify_Inter}} = T_{\text{Basic_Identify_Inter}} \cdot \frac{480}{T_{\text{Inter1}}} \cdot N_{\text{freq}} \quad ms,$$

- When configuration 2 or configuration 3 in Table 8.1.2.3.2.1-1 is applied,

$$\mathbf{T}_{\text{Identify_Inter}} = \mathbf{T}_{\text{Basic_Identify_Inter}} \cdot \frac{480}{\mathbf{T}_{\text{Inter}}} \cdot N_{\textit{freq}} + 240 \cdot N_{\textit{freq}} \quad \textit{ms} \; .$$

 $T_{Basic_Identify_Inter} = 480$ ms. It is the time period used in the inter frequency equation where the maximum allowed time for the UE to identify a new TDD inter-frequency cell is defined.

 N_{freq} is defined in clause 8.1.2.1.1 and T_{inter1} is defined in clause 8.1.2.1

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP_{dBm} and RSRP Ês/Iot according to Annex B.2.3 for a corresponding Band,
- other RSRP related side conditions given in Clause 9.1.3.1 and 9.1.3.2 are fulfilled for a corresponding Band,
- RSRQ related side conditions given in Sections 9.1.6.1 and 9.1.6.2 are fulfilled for a corresponding Band,
- RS-SINR related side conditions given in Sections 9.1.17.3.1 and 9.1.17.3.2 are fulfilled for a corresponding Band,
- SCH_RP|_{dBm} and SCH Ês/Iot according to Annex B.2.3 for a corresponding Band.

When measurement gaps are scheduled for TDD inter frequency measurements, or the UE supports capability of conducting such measurements without gaps, the UE physical layer shall be capable of reporting RSRP, RSRQ, and RS-SINR measurements to higher layers with measurement accuracy as specified in sub-clauses 9.1.3.1, 9.1.3.2, 9.1.6.1, 9.1.6.2, 9.1.17.3.1 and 9.1.17.3.2, respectively, with measurement period ($T_{\text{Measurement_Period_TDD_Inter}$) given by table 8.1.2.3.2.1-1:

Table 8.1.2.3.2.1-1: T_{Measurement_Period_TDD_Inter} for different configurations

Configuration	Measurement bandwidth [RB]	Number of UL/DL sub- frames per half frame (5 ms)		DWPTS		T _{Measurement_Period} _ _{TDD_Inter} [ms] (normal performance)	T _{Measurement_Period_T} DD_Inter [ms] (reduced performance)
		DL	UL	Normal CP	Extended CP		
0	6	2	2	$19760 \cdot T_{\rm s}$	20480· <i>T</i> _s	480 x K _n x N _{freq,n}	$480 \times K_r \times N_{freq,r}$
1 (Note 1)	50	2	2	$19760 \cdot T_{\rm s}$	20480·T _s	240 x K _n x N _{freq,n}	240 x K _r x N _{freq,r}
2	6	1	3	19760 · T _s	20480·T _s	720 x K _n x N _{freq,n}	$720 \times K_r \times N_{freq,r}$
3 (Note 1)	50	1	3	19760 · T _s	20480·T _s	480 x K _n x N _{freq,n}	480 x K _r x N _{freq,r}
Note 1: This configuration is optional Note 2: T_s is defined in TS 36.211 [16] Note 3: N/A.							

The UE shall be capable of performing RSRP, RSRQ, RS-SINR measurements of at least 4 inter-frequency cells per TDD inter-frequency and the UE physical layer shall be capable of reporting RSRP, RSRQ, and RS-SINR measurements to higher layers with the measurement period T_{Measurement Period TDD Inter}.

8.1.2.3.2.1.1 Measurement Reporting Requirements

8.1.2.3.2.1.1.1 Periodic Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.3.1, 9.1.3.2, 9.1.6.1, 9.1.6.2, 9.1.17.3.1 and 9.1.17.3.2, respectively.

8.1.2.3.2.1.1.2 Event-triggered Periodic Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.3.1, 9.1.3.2, 9.1.6.1, 9.1.6.2, 9.1.17.3.1 and 9.1.17.3.2, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.3.2.1.1.3.

8.1.2.3.2.1.1.3 Event Triggered Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.3.1, 9.1.3.2, 9.1.6.1, 9.1.6.2, 9.1.17.3.1 and 9.1.17.3.2, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{Identify_Inter}$ defined in clause 8.1.2.3.2.1. When L3 filtering is used or IDC autonomous denial or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{Identify_Inter}$ defined in clause 8.1.2.3.2.1 and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_TDD_Inter}$ defined in clause 8.1.2.3.2.1 provided the timing to that cell has not changed more than \pm 50 Ts while measurementgap has not been available and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

8.1.2.3.2.2 E-UTRAN TDD – TDD inter frequency measurements when DRX is used

When DRX is in use, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new detectable E-UTRAN TDD inter frequency cell within $T_{identify\ inter}$ as shown in table 8.1.2.3.2.2-1

DRX cycle length (s)	T _{identify_inter} (s) (DRX cycles) (normal performance)		T _{identify_inter} (s) (DRX cycles) (reduced performance)		
	Gap period =	Gap period =	Gap period =	Gap period =	
	40 ms	80 ms	40 ms	80 ms	
≤0.16	Non DRX	Non DRX	Non DRX	Non DRX	
	Requirements in	Requirements in	Requirements in	Requirements in	
	clause 8.1.2.3.2.1	clause 8.1.2.3.2.1	clause 8.1.2.3.2.1	clause 8.1.2.3.2.1	
	are applicable	are applicable	are applicable	are applicable	
0.256	5.12*K _n *N _{freq,n}	7.68*K _n *N _{freq,n}	$5.12*K_r*N_{freq,r}$	7.68*K _r *N _{freq,r}	
	(20*K _n *N _{freq,n})	(30*K _n *N _{freq,n})	$(20*K_r*N_{freq,r})$	$(30*K_r *N_{freq,r})$	
0.32	$6.4*K_n*N_{freq,n}$	7.68*K _n *N _{freq,n}	$6.4*K_r*N_{freq,r}$	$7.68*K_r*N_{freq,r}$	
	(20*K _n *N _{freq,n})	(24*K _n *N _{freq,n})	$(20*K_r*N_{freq,r})$	(24*K _r *N _{freq,r})	
0.32 <drx-< td=""><td>Note (20*K_n</td><td>Note (20*K_n</td><td>Note (20*K_r</td><td>Note (20*K_r</td></drx-<>	Note (20*K _n	Note (20*K _n	Note (20*K _r	Note (20*K _r	
cycle≤2.56	*N _{freq,n})	*N _{freq,n})	$*N_{freq,r}$)	$*N_{freq,r}$)	
Note: Ti	me depends upon th	e DRX cycle in use			

Table 8.1.2.3.2.2-1: Requirement to identify a newly detectable TDD interfrequency cell

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP_{dBm} and RSRP Ês/Iot according to Annex B.2.3 for a corresponding Band,
- other RSRP related side conditions given in Clause 9.1.3.1 and 9.1.3.2 are fulfilled for a corresponding Band,
- RSRQ related side conditions given in Sections 9.1.6.1 and 9.1.6.2 are fulfilled for a corresponding Band,
- RS-SINR related side conditions given in Sections 9.1.17.3.1 and 9.1.17.3.2 are fulfilled for a corresponding Band,
- SCH_RP|_{dBm} and SCH Ês/Iot according to Annex B.2.3 for a corresponding Band.

The UE shall be capable of performing RSRP, RSRQ, and RS-SINR measurements of at least 4 inter-frequency cells per TDD inter-frequency for up to 3 TDD inter-frequencies and the UE physical layer shall be capable of reporting RSRP, RSRQ, and RS-SINR measurements to higher layers with the measurement period defined in Table 8.1.2.3.2.2-2 when DRX is in use, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps.

Table 8.1.2.3.2.2-2: Requirement to measure TDD interfrequency cells

DRX cycle length (s)	T _{measure_inter} (s) (DRX cycles) (normal	T _{measure_inter} (s) (DRX cycles) (reduced	
	requirement)	requirement)	
≤0.08	Non DRX	Non DRX	
	Requirements in	Requirements in	
	clause 8.1.2.3.2.1	clause 8.1.2.3.2.1	
	are applicable	are applicable	
0.128	When configuration	When configuration	
	2 non DRX	2 non DRX	
	Requirements in Requirement		
	clause 8.1.2.3.2.1	clause 8.1.2.3.2.1	
	are applicable,	are applicable,	
	Otherwise	Otherwise	
	Note (5*K _n *N _{freq,n})	Note (5*K _r *N _{freq,r})	
0.128 <drx-< td=""><td>Note $(5*K_n*N_{freq,n})$</td><td>Note $(5*K_r*N_{freq,r})$</td></drx-<>	Note $(5*K_n*N_{freq,n})$	Note $(5*K_r*N_{freq,r})$	
cycle≤2.56			
Note: Time depends upon the DRX cycle in use			

The RSRP measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.3.1 and 9.1.3.2, the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.6.1 and 9.1.6.2, and the RS-SINR measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.17.3.1 and 9.1.17.3.2.

8.1.2.3.2.2.1 Measurement Reporting Requirements

8.1.2.3.2.2.1.1 Periodic Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.3.1, 9.1.3.2, 9.1.6.1, 9.1.6.2, 9.1.17.3.1 and 9.1.17.3.2, respectively.

8.1.2.3.2.2.1.2 Event-triggered Periodic Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in event triggered periodic measurement reports shall meet the requirements in clause 9.1.3.1, 9.1.3.2, 9.1.6.1, 9.1.6.2, 9.1.17.3.1 and 9.1.17.3.2, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.3.2.2.1.3.

8.1.2.3.2.2.1.3 Event Triggered Reporting

Reported RSRP, RSRQ, and RS-SINR measurements contained in event triggered measurement reports shall meet the requirements in clause 9.1.3.1, 9.1.3.2, 9.1.6.1, 9.1.6.2, 9.1.17.3.1 and 9.1.17.3.2, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{Identify_Inter}$ defined in Clause 8.1.2.3.2.2. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{Identify_Inter}$ in clause 8.1.2.3.2.2 and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{measure_inter}$ in clause 8.1.2.3.2.2 provided the timing to that cell has not changed more than \pm 50 Ts while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

8.1.2.3.3 E-UTRAN TDD – FDD inter frequency measurements

8.1.2.3.3.1 E-UTRAN TDD – FDD inter frequency measurements when no DRX is used

The requirements in this clause shall apply to UE supporting FDD and TDD.

The requirements in clause 8.1.2.3.1.1 also apply for this section.

8.1.2.3.3.2 E-UTRAN TDD – FDD inter frequency measurements when DRX is used

The requirements in this clause shall apply to UE supporting FDD and TDD.

The requirements in clause 8.1.2.3.1.2 also apply for this section.

8.1.2.3.4 E-UTRAN FDD – TDD inter frequency measurements

8.1.2.3.4.1 E-UTRAN FDD – TDD inter frequency measurements when no DRX is used

The requirements in this clause shall apply to UE supporting FDD and TDD.

The requirements in clause 8.1.2.3.2.1 also apply for this section.

8.1.2.3.4.2 E-UTRAN FDD – TDD inter frequency measurements when DRX is used

The requirements in this clause shall apply to UE supporting FDD and TDD.

The requirements in clause 8.1.2.3.2.2 also apply for this section.

8.1.2.3.5 E-UTRAN FDD-FDD inter frequency measurements with autonomous gaps

8.1.2.3.5.1 Identification of a new CGI of E-UTRA FDD cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose of 'reportCGI'. The UE may make autonomous gaps in both downlink reception and uplink transmission for receiving MIB and SIB1 message according to clause 5.5.3.1 of TS 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or not, or whether SCell(s) are configured or not, the UE shall be able to identify a new CGI of E-UTRA cell within:

$$T_{\text{identify CGI, inter}} = T_{\text{basic identify CGI, inter}}$$
 ms

Where

 $T_{basic_identify_CGI, inter} = 150$ ms. This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of E-UTRA cell is defined, provided that the E-UTRA cell has been already identified by the UE.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in Clause 9.1 are fulfilled for a corresponding Band,
- SCH_RP|_{dBm} and SCH Ês/Iot according to Annex B.2.3 for a corresponding Band.

The MIB of an E-UTRA cell whose CGI is identified shall be considered decodable by the UE provided the PBCH demodulation requirements are met according to [5].

The requirement for identifying a new CGI of an E-UTRA cell within $T_{basic_identify_CGI,inter}$ is applicable when no DRX is used as well as when all the DRX cycles specified in TS 36.331 [2] are used.

Within the time, $T_{identify_CGI, intra}$ ms, over which the UE identifies the new CGI of E-UTRA cell, the UE shall transmit at least 60 ACK/NACKs on PCell or each of activated SCell(s), provided that:

- there is continuous DL data allocation,
- no DRX cycle is used,
- no measurement gaps are configured,
- only one code word is transmitted in each subframe,
- no MBSFN subframes are configured in the PCell or each of activated SCell(s).

8.1.2.3.5.2 ECGI Reporting Delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle. If IDC autonomous denial is configured, an additional delay can be expected.

8.1.2.3.6 E-UTRAN TDD-FDD inter frequency measurements using autonomous gaps

The requirements in this clause shall apply to UE supporting FDD and TDD.

8.1.2.3.6.1 Identification of a new CGI of E-UTRA FDD cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose of 'reportCGI'. The UE may make autonomous gaps in both downlink reception and uplink transmission for receiving MIB and SIB1 message according to clause 5.5.3.1 of TS 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or not, or whether SCell(s) are configured or not, the UE shall be able to identify a new CGI of E-UTRA cell within:

$$T_{\text{identify_CGI, inter}} = T_{\text{basic_identify_CGI, inter}}$$
 ms

Where

 $T_{basic_identify_CGI, inter} = 150$ ms. This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of E-UTRA cell is defined, provided that the E-UTRA cell has been already identified by the UE.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in Clause 9.1 are fulfilled for a corresponding Band,
- SCH_RP|_{dBm} and SCH Ês/Iot according to Annex B.2.4 for a corresponding Band.

The MIB of an E-UTRA cell whose CGI is identified shall be considered decodable by the UE provided the PBCH demodulation requirements are met according to [5].

The requirement for identifying a new CGI of an E-UTRA cell within $T_{basic_identify_CGI,inter}$ is applicable when no DRX is used as well as when all the DRX cycles specified in TS 36.331 [2] are used.

Within the time, $T_{identify_CGI,inter}$ ms, over which the UE identifies the new CGI of E-UTRA cell, the UE shall be able to transmit at least the number of ACK/NACKs stated in Table 8.1.2.3.6.1-1 on PCell or each of activated SCell(s), provided that:

- there is continuous DL data allocation,
- no DRX cycle is used,
- no measurement gaps are configured,
- only one code word is transmitted in each subframe,
- no MBSFN subframes are configured in the PCell or each of activated SCell(s).

Table 8.1.2.3.6.1-1: Requirement on minimum number of ACK/NACKs to transmit during T_{basic_identify_CGI, inter}.

TDD UL/DL configuration for serving cell		Minimum number of transmitted ACK/NACKs	
0 (Note 1)		18	
1		30	
Note 1:	When a UE is configured with EIMTA-		
	MainConfigServCell via RRC signalling [2] only		
	this requirement shall apply.		
Note 2:	The requirement for other TDD UL/DL		
	configuration is TBD.		

8.1.2.3.6.2 ECGI Reporting Delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle. If IDC autonomous denial is configured, an additional delay can be expected.

8.1.2.3.7 E-UTRAN TDD-TDD inter frequency measurements with autonomous gaps

8.1.2.3.7.1 Identification of a new CGI of E-UTRA TDD cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose of 'reportCGI'. The UE may make autonomous gaps in both downlink reception and uplink transmission for receiving MIB and SIB1 message according to clause 5.5.3.1 of TS 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or not, or whether SCell(s) are configured or not, the UE shall be able to identify a new CGI of E-UTRA cell within:

$$T_{\text{identify CGI, inter}} = T_{\text{basic identify CGI, inter}}$$
 ms

Where

 $T_{basic_identify_CGI, inter} = 150$ ms. This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of E-UTRA cell is defined, provided that the E-UTRA cell has been already identified by the UE.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in Clause 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.4 for a corresponding Band.

The MIB of an E-UTRA cell whose CGI is identified shall be considered decodable by the UE provided the PBCH demodulation requirements are met according to [5].

The requirement for identifying a new CGI of an E-UTRA cell within T_{basic_identify_CGI,inter} is applicable when no DRX is used as well as when all the DRX cycles specified in TS 36.331 [2] are used.

Within the time, $T_{identify_CGI,inter}$ ms, over which the UE identifies the new CGI of E-UTRA cell, the UE shall be able to transmit at least the number of ACK/NACKs stated in Table 8.1.2.3.7.1-1 on PCell or each of activated SCell(s), provided that:

- there is continuous DL data allocation,
- no DRX cycle is used,
- no measurement gaps are configured,
- only one code word is transmitted in each subframe,
- no MBSFN subframes are configured in the PCell or each of activated SCell(s).

Table 8.1.2.3.7.1-1: Requirement on minimum number of ACK/NACKs to transmit during $T_{basic_identify_CGI, inter}$.

TDD UL/DL configuration for serving cell		Minimum number of transmitted ACK/NACKs	
0 (Note 1)		18	
1		30	
Note 1:	When a UE is configured with EIMTA- MainConfigServCell via RRC signalling [2] only this requirement shall apply cell.		
Note 2:	The requirement for other TDD UL/DL configuration is TBD.		

8.1.2.3.7.2 ECGI Reporting Delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle. If IDC autonomous denial is configured, an additional delay can be expected.

8.1.2.3.8 E-UTRAN FDD-TDD inter frequency measurements using autonomous gaps

The requirements in this clause shall apply to UE supporting FDD and TDD.

8.1.2.3.8.1 Identification of a new CGI of E-UTRA TDD cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose of 'reportCGI'. The UE may make autonomous gaps in both downlink reception and uplink transmission for receiving MIB and SIB1 message according to clause 5.5.3.1 of TS 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or not, or whether SCell(s) are configured or not, the UE shall be able to identify a new CGI of E-UTRA cell within:

$$T_{\text{identify_CGI, inter}} = T_{\text{basic_identify_CGI, inter}}$$
 ms

Where

 $T_{basic_identify_CGI, inter} = 150$ ms. This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of E-UTRA cell is defined, provided that the E-UTRA cell has been already identified by the UE.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in Clause 9.1 are fulfilled for a corresponding Band,

- SCH_RP and SCH Ês/Iot according to Annex B.2.4 for a corresponding Band.

The MIB of an E-UTRA cell whose CGI is identified shall be considered decodable by the UE provided the PBCH demodulation requirements are met according to [5].

The requirement for identifying a new CGI of an E-UTRA cell within $T_{basic_identify_CGI,inter}$ is applicable when no DRX is used as well as when all the DRX cycles specified in TS 36.331 [2] are used.

Within the time, $T_{identify_CGI,inter}$ ms, over which the UE identifies the new CGI of E-UTRA cell, the UE shall have more than 60 ACK/NACKs transmitted on PCell or each of activated SCell(s), provided that:

- there is continuous DL data allocation,
- no DRX cycle is used,
- no measurement gaps are configured,
- only one code word is transmitted in each subframe,
- no MBSFN subframes are configured in the PCell or each of activated SCell(s).

8.1.2.3.8.2 ECGI Reporting Delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle. If IDC autonomous denial is configured, an additional delay can be expected.

8.1.2.4 Inter RAT measurements

8.1.2.4.1 E-UTRAN FDD – UTRAN FDD measurements

8.1.2.4.1.1 E-UTRAN FDD – UTRAN FDD measurements when no DRX is used

8.1.2.4.1.1.1 Identification of a new UTRA FDD cell

When explicit neighbour list is provided and no DRX is used, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new detectable cell belonging to the monitored set within

$$\mathbf{T}_{\text{identify, UTRA_FDD}} = \mathbf{T}_{\text{basic_identify_UTRA_FDD}} \cdot \frac{480}{\mathbf{T}_{\text{interl}}} \cdot \mathbf{K}_n \cdot \mathbf{N}_{\textit{Freq},n} \quad \textit{ms} \; \text{(normal performance)},$$

and

$$T_{\text{identify, UTRA_FDD}} = T_{\text{basic_identify_UTRA_FDD}} \cdot \frac{480}{T_{\text{interl}}} \cdot K_r \cdot N_{\textit{Freq,r}} \quad \textit{ms} \text{ (reduced performance)}$$

A cell shall be considered detectable when

- CPICH Ec/Io > -20 dB,
- SCH_Ec/Io ≥ -17 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

8.1.2.4.1.1.1a Enhanced UTRA FDD cell identification requirements

When explicit neighbour list is provided and no DRX is used or when DRX cycle length \leq 40 ms, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new detectable cell belonging to the monitored set within $T_{identify,\,enhanced_UTRA_FDD}$:

$$T_{\text{identify, enhanced_UTRA_FDD}} = (T_{\text{basic_identify_enhanced_UTRA_FDD}} \cdot \frac{480}{T_{\text{interl}}} + 480) \; K_n N_{\textit{Freq},n} \quad \textit{ms} \; (\text{normal performance})$$

and

$$\mathbf{T}_{\text{identify, enhanced_UTRA_FDD}} = (\mathbf{T}_{\text{basic_identify_enhanced_UTRA_FDD}} \cdot \frac{480}{\mathbf{T}_{\text{inter1}}} + 480) \; K_r N_{\textit{Freq,r}} \quad \textit{ms} \; (\text{reduced performance})$$

A cell shall be considered detectable when:

- CPICH Ec/Io \geq -15 dB,
- SCH_Ec/Io ≥ -15 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

8.1.2.4.1.1.2 UE UTRA FDD CPICH measurement capability

When measurement gaps are scheduled for UTRA FDD inter RAT measurements, or the UE supports capability of conducting such measurements without gaps, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in Clause 9.2 with measurement period given by

$$T_{\text{measurement_UTRA_FDD}} = Max \left\{ T_{\text{Measurement_Period UTRA_FDD}}, T_{\text{basic_measurement_UTRA_FDD}} \cdot \frac{480}{T_{\text{interl}}} \cdot K_n \cdot N_{\textit{Freq,n}} \right\} ms \text{ (normal performance)}$$

and

$$T_{\text{measurement_UTRA_FDD}} = Max \left\{ T_{\text{Measurement_Period UTRA_FDD}}, T_{\text{basic_measurement_UTRA_FDD}} \cdot \frac{480}{T_{\text{interl}}} \cdot K_r \cdot N_{\textit{Freq,r}} \right\} ms \text{ (reduced performance)}$$

The UE shall be capable of performing UTRA FDD CPICH measurements for $X_{basic\ measurementUTRA_FDD}$ inter-frequency cells per FDD frequency and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{Measurement\ UTRA\ FDD}$.

 $X_{basic\ measurement\ UTRA\ FDD} = 6$

 $T_{Measurement_Period\ UTRA_FDD} = 480\ ms.$ The period used for calculating the measurement period $T_{measurement_UTRA_FDD}$ for UTRA FDD CPICH measurements.

 $T_{basic_identify_UTRA_FDD} = 300$ ms. This is the time period used in the inter RAT equation in clause 8.1.2.4.1.1.1 where the maximum allowed time for the UE to identify a new UTRA FDD cell is defined.

 $T_{basic_identify_enhanced_UTRA_FDD} = 60$ ms. This is the time period used in the inter RAT equation in clause 8.1.2.4.1.1.1a where the maximum allowed time for the UE to identify a new UTRA FDD cell is defined.

 $T_{basic_measurement_UTRA_FDD} = 50$ ms. This is the time period used in the equation for defining the measurement period for inter RAT CPICH measurements.

 $N_{freq,r}$, $N_{freq,r}$, K_n and K_r are defined in clause 8.1.2.1.1 and T_{inter1} is defined in clause 8.1.2.1

8.1.2.4.1.1.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in clause 9.

8.1.2.4.1.1.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in clause 9.

The UE shall not send any event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify,\,UTRA_FDD}$ defined in Clause 8.1.2.4.1.1.1 for the minimum requirements or $T_{identify,\,enhanced_UTRA_FDD}$ defined in Clause 8.1.2.4.1.1.1a for the enhanced requirements When L3 filtering is used or IDC autonomous denial or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify,\,UTRA_FDD}$ defined in clause 8.1.2.4.1.1.1 for the minimum requirements or $T_{identify,\,enhanced_UTRA_FDD}$ defined in Clause 8.1.2.4.1.1.1a for the enhanced requirements and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{measurement_UTRA_FDD}$ defined in clause 8.1.2.4.1.1.2 provided the timing to that cell has not changed more than \pm 32 chips while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

8.1.2.4.1.1.5 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in clause 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.4.1.1.4.

8.1.2.4.1.2 E-UTRAN FDD – UTRAN FDD measurements when DRX is used

When explicit neighbour list is provided and DRX is used, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new detectable cell belonging to the neighbour cell list within T_{identify,UTRA_FDD} as shown in table 8.1.2.4.1.2-1

Table 8.1.2.4.1.2-1: Requirement to identify a newly detectable UTRA FDD cell

DRX cycle length (s)	T _{identify_UTRA_FDD} (s) (DRX cycles) normal requirement		T _{identify_UTRA_FDD} (s) (DRX cycles) reduced requirement		
	Gap period = 40 ms	Gap period = 80 ms	Gap period = 40 ms	Gap period = 80 ms	
≤0.04	Non DRX Requirements in clause 8.1.2.4.1.1 are applicable	Non DRX Requirements in clause 8.1.2.4.1.1 are applicable	Non DRX Requirements in clause 8.1.2.4.1.1 are applicable	Non DRX Requirements in clause 8.1.2.4.1.1 are applicable	
0.064	2.56*K _n * N _{freq,n} (40* Nf _{freq,n})	4.8* K _n * N _{freq,n} (75* K _n * N _{freq,n})	2.56*K _r * N _{freq,r} (40* K _r * Nf _{freq,r})	4.8* K _r * N _{freq,r} (75* K _r * N _{freq,r})	
0.08	3.2* K _n * N _{freq,n} (40* K _n * N _{freq,n})	4.8* K _n * N _{freq,n} (60* K _n * N _{freq,n})	3.2* K _r * N _{freq,r} (40* K _r * N _{freq,r})	4.8* K _r * N _{freq,r} (60* K _r * N _{freq,r})	
0.128	3.2* K _n * N _{freq,n} (25* K _n * Nfreq)	$\begin{array}{cccc} 4.8^* \; K_n^* \; \; N_{freq,n} \\ (37.5^* \; K_n^* \; \; N_{freq,n}) \end{array}$	3.2* K _r * N _{freq,n} (25* K _r * N _{freq,r})	4.8* K _r * N _{freq,r} (37.5* K _r * N _{freq,r})	
0.16	3.2* K _n * N _{freq,n} (20* K _n * N _{freq,n})	4.8* K _n * N _{freq,n} (30* K _n * N _{freq,n})	3.2* K _r * N _{freq,n} (20* K _r * N _{freq,r})	4.8* K _r * N _{freq,r} (30* K _r * N _{freq,r})	
0.16 <drx- cycle≤2.56</drx- 	Note (20* K _n * N _{freq,n})	Note (20* K _n * N _{freq,n})	Note (20* K _r * N _{freq,r})	Note (20* K _r * N _{freq,r})	
Note: Time of	lepends upon the DF	RX cycle in use			

A cell shall be considered detectable provided following conditions are fulfilled: A cell shall be considered detectable when

- CPICH Ec/Io \geq -20 dB,
- SCH_Ec/Io ≥ -17 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

The UE shall be capable of performing RSCP and Ec/Io measurements of at least 6 UTRA cells per UTRA FDD carrier for up to 3 UTRA FDD carriers and the UE physical layer shall be capable of reporting RSCP and Ec/Io measurements to higher layers with the measurement period defined in table 8.1.2.3.1.2-2 when DRX is used, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps. UE supporting Increased UE carrier monitoring UTRA shall be capable of performing RSCP and Ec/Io measurements of at least 6 UTRA cells per UTRA FDD carrier for up to 6 UTRA FDD carriers with maximum of 80 cells consisting of at most 32 cells per frequency layer in the neighbour cell list

DRX cycle length (s)	T _{measure_UTRA_FDD} (s) (DRX cycles) normal requirement		T _{measure_UTRA_FDD} (s) (DRX cycles) normal requirement		
	Gap period = 40 ms	Gap period = 80 ms	Gap period = 40 ms	Gap period = 80 ms	
≤0.04	Non DRX Requirements in clause 8.1.2.4.1.1 are applicable	Non DRX Requirements in clause 8.1.2.4.1.1 are applicable	Non DRX Requirements in clause 8.1.2.4.1.1 are applicable	Non DRX Requirements in clause 8.1.2.4.1.1 are applicable	
0.064	0.48*K _n * N _{freq,n} (7.5* K _n * N _{freq,n})	0.8* K _n * N _{freq,n} (12.5* K _n * N _{freq,n})	0.48* K _r * N _{freq,r} (7.5* K _r * N _{freq,r})	0.8* K _r * N _{freq,r} (12.5* K _r * N _{freq,r})	
0.08	0.48* K _n * N _{freq,n} (6* K _n * N _{freq,n})	0. 8* K _n * N _{freq,n} (10* N _{freq,n})	0.48* K _r * N _{freq,r} (6* K _r * N _{freq,r})	0. 8* K _r * N _{freq,r} (10* K _r * N _{freq,r}	
0.128	0.64* K _n * N _{freq,n} (5* K _n * N _{freq,n})	0. 8* K _n * N _{freq,n} (6.25* N _{freq,n})	0.64* K _r * N _{freq,r} (5* K _r * N _{freq,r})	0. 8* K _r * N _{freq,r} (6.25* N _{freq,r})	
0.128 <drx- cycle≤2.56</drx- 	Note (5* K _n * N _{freq,n})	Note (5* K _n * N _{freq,n})	Note (5* K _r * N _{freq,r})	Note (5* K _r * N _{freq,r})	

Table 8.1.2.4.1.2-2: Requirement to measure UTRA FDD cells

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.

8.1.2.4.1.2.1 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in clause 9.

8.1.2.4.1.2.2 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in clause 9.

The UE shall not send any event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify,UTRA_FDD}$ defined in Clause 8.1.2.4.1.2. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify,\,UTRA_FDD}$ defined in clause 8.1.2.4.1.2 and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{measurement_UTRA_FDD}$ defined in clause 8.1.2.4.1.2 provided the timing to that cell has not changed more than \pm 32 chips while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

8.1.2.4.1.2.3 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in clause 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.4.1.2.2.

8.1.2.4.2 E-UTRAN TDD – UTRAN FDD measurements

The requirements in clause 8.1.2.4.1 also apply for this section.

8.1.2.4.2.1	E-LITRAN TOD -	- LITRAN EDD	measurements when	no DRY is used
0.1.2.4.2.1	E-UIKAN IUU-	- U I KAN FUU	measurements when	I NO DRA IS USEU

8.1.2.4.2.2 E-UTRAN TDD – UTRAN FDD measurements when DRX is used

8.1.2.4.3 E-UTRAN TDD – UTRAN TDD measurements

8.1.2.4.3.1 E-UTRAN TDD – UTRAN TDD measurements when no DRX is used

8.1.2.4.3.1.1 Identification of a new UTRA TDD cell

When explicit neighbour list is provided and no DRX is used, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify, UTRA_TDD}} = Max \left\{ 5000, T_{\text{basic identify UTRA_TDD}} \cdot \frac{480}{T_{\text{interl}}} \cdot K_n \cdot N_{Freq,n} \right\} ms \text{ (normal requirement)},$$

and

$$T_{\text{identify, UTRA_TDD}} = Max \left\{ 5000, T_{\text{basic identify UTRA_TDD}} \cdot \frac{480}{T_{\text{interl}}} \cdot K_r \cdot N_{Freq,r} \right\} ms \text{ (reduced requirement)}$$

A cell shall be considered detectable when

- P-CCPCH Ec/Io \geq -8 dB,
- DwPCH_Ec/Io \geq -5 dB.

When L3 filtering is used an additional delay can be expected.

8.1.2.4.3.1.1a Enhanced UTRA TDD cell identification requirements

When explicit neighbour list is provided and no DRX is used or when DRX cycle length \leq 40 ms, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new detectable cell belonging to the monitored set within $T_{identify,\,enhanced\,\,UTRA\,\,TDD}$:

$$T_{\text{identify, enhanced_UTRA_TDD}} = (T_{\text{basic_identify_enhanced_UTRA_TDD}} \cdot \frac{480}{T_{\text{interl.}}} + 480) \cdot K_n \cdot N_{\textit{Freq,n}} \quad \textit{ms} \text{ (normal requirement)},$$

and

$$\mathbf{T}_{\text{identify, enhanced_UTRA_TDD}} = (\mathbf{T}_{\text{basic_identify_enhanced_UTRA_TDD}} \cdot \frac{480}{\mathbf{T}_{\text{interl}}} + 480) \cdot K_r \cdot N_{\textit{Freq,r}} \quad \textit{ms} \text{ (reduced requirement A cell for the property of the p$$

shall be considered detectable when:

- P-CCPCH_Ec/Io \geq -6 dB,
- DwPCH_Ec/Io \geq -1 dB

When L3 filtering is used an additional delay can be expected.

8.1.2.4.3.1.2 UE UTRA TDD P-CCPCH RSCP measurement capability

When measurement gaps are scheduled for UTRA TDD inter RAT measurements, or the UE supports capability of conducting such measurements without gaps, the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in Clause 9.3 with measurement period given by

$$T_{\text{measurement UTRA_TDD}} = Max \left\{ T_{\text{Measurement_Period UTRA_TDD}}, T_{\text{basic measurement UTRA_TDD}}, \frac{480}{T_{\text{interl}}} \cdot K_n \cdot N_{\textit{Freq,n}} \right\} ms$$
(normal performance,

and

$$T_{\text{measurement UTRA_TDD}} = Max \left\{ T_{\text{Measurement_Period UTRA_TDD}} \cdot T_{\text{basic measurement UTRA_TDD}} \cdot \frac{480}{T_{\text{interl}}} \cdot K_r \cdot N_{\textit{Freq,r}} \right\} ms \text{ (reduced performance)}$$

The UE shall be capable of performing UTRA TDD P-CCPCH RSCP measurements for $X_{basic\ measurementUTRA_TDD}$ interfrequency cells per TDD frequency of the monitored set, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{Measurement_UTRA_TDD}$.

 $X_{basic\ measurementUTRA\ TDD} = 6$

 $T_{\text{Measurement_Period UTRA_TDD}}$ = 480 ms is the period used for calculating the measurement period $T_{\text{measurement_UTRA_TDD}}$ for UTRA TDD P-CCPCH RSCP measurements.

 $T_{basic_identify_UTRA_TDD} = 800$ ms is the time period used in the inter RAT equation in clause 8.1.2.4.3.1.1 where the maximum allowed time for the UE to identify a new UTRA TDD cell is defined.

 $T_{basic_identify_enhanced_UTRA_TDD} = 80$ ms is the time period used in the inter RAT equation in clause 8.1.2.4.3.1.1a where the maximum allowed time for the UE to identify a new UTRA TDD cell is defined.

 $T_{basic_measurement_UTRA_TDD} = 50$ ms is the time period used in the equation for defining the measurement period for inter RAT P-CCPCH RSCP measurements.

 $N_{\text{freq,n}}$, $N_{\text{freq,r}}$, K_n and K_r are defined in clause 8.1.2.1.1 and T_{inter1} is defined in clause 8.1.2.1

8.1.2.4.3.1.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in clause 9.

8.1.2.4.3.1.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in clause 9.

The UE shall not send any event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify,\,UTRA_TDD}$ defined in Clause 8.1.2.4.3.1.1 for the minimum requirements or $T_{identify,\,enhanced_UTRA_TDD}$ defined in Clause 8.1.2.4.3.1.1a for the enhanced requirements. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify,\,UTRA_TDD}$ defined in clause 8.1.2.4.3.1.1 for the minimum requirements and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{measurement_UTRA_TDD}$ defined in clause 8.1.2.4.3.1.2 provided the timing to that cell has not changed more than \pm 10 chips while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

(20*K_r * N_{freq,r})

8.1.2.4.3.1.5 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in clause 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.4.3.1.4.

8.1.2.4.3.2 E-UTRAN TDD – UTRAN TDD measurements when DRX is used

When explicit neighbour list is provided and DRX is used, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new detectable cell belonging to the neighbour cell list within $T_{identify,UTRA_TDD}$ as shown in table 8.1.2.4.3.2-1

T_{identify_UTRA_TDD} (s) (DRX cycles) T_{identify_UTRA_TDD} (s) (DRX cycles) **DRX** cycle (normal requirement) (reduced requirement) length (s) Gap period = 40 Gap period = 80Gap period = 80 Gap period = 40ms ms ms ms ≤0.32 Non DRX Non DRX Non DRX Non DRX Requirements in Requirements in Requirements in Requirements in clause 8.1.2.4.3.1 clause 8.1.2.4.3.1 clause 8.1.2.4.3.1 clause 8.1.2.4.3.1 are applicable are applicable are applicable are applicable 0.32<DRX-Note (20*K_n* Note (25*K_n Note (20*K_r* Note (25*K_r * cycle≤0.512 N_{freq,n}) N_{freq,n}) $N_{freq,r}$ N_{freq,r}) 0.512<DRX-Note (20*K_n Note (20*K_r * Note Note

Table 8.1.2.4.3.2-1: Requirement to identify a newly detectable UTRA TDD cell

A cell shall be considered detectable provided following conditions are fulfilled: A cell shall be considered detectable when

N_{freq,r})

(20*K_n * N_{freg,n})

- P-CCPCH Ec/Io \geq -8 dB,

cycle≤2.56

Note:

- DwPCH_Ec/Io \geq -5 dB.

When L3 filtering is used an additional delay can be expected.

 $N_{freq,n}$

Time depends upon the DRX cycle in use

The UE shall be capable of performing UTRA TDD P-CCPCH RSCP measurements of at least 6 UTRA cells per UTRA TDD carrier for up to 3 UTRA TDD carriers and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period defined in table 8.1.2.4.3.2-2 when DRX is used, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps. UE supporting Increased UE carrier monitoring UTRA shall be capable of performing UTRA TDD P-CCPCH RSCP measurements of at least 6 UTRA cells per UTRA TDD carrier for up to 7 UTRA TDD carriers with maximum of 80 cells consisting of at most 32 cells per frequency layer in the neighbour cell list.

DRX cycle length (s)		(s) (DRX cycles) quirement)	T _{measure_UTRA_TDD} (s) (DRX cycles) (reduced requirement)	
	Gap period = 40	Gap period = 80	Gap period = 40	Gap period = 80
	ms	ms	ms	ms
≤0.04	Non DRX	Non DRX	Non DRX	Non DRX
	Requirements in	Requirements in	Requirements in	Requirements in
	clause 8.1.2.4.3.1	clause 8.1.2.4.3.1	clause 8.1.2.4.3.1	clause 8.1.2.4.3.1
	are applicable	are applicable	are applicable	are applicable
0.064	0.48*K _n *N _{freq,n}	$0.8*K_n*N_{freq,n}$	0.48* K _r * N _{freq,r}	0.8* K _r * N _{freq,r}
	$(7.5*K_n *N_{freq,n})$	(12.5*K _n *N _{freq,n})	(7.5* K _r * N _{freq,r})	(12.5* K _r * N _{freq,r})
0.08	0.48*K _n *N _{freq,n}	0. 8*K _n *N _{freq,n}	0.48* K _r * N _{freq,r}	0. 8* K _r * N _{freq,r}
	(6*K _n *N _{freq,n})	(10*K _n *N _{freq,n})	(6* K _r * N _{freq,r})	(10* K _r * N _{freq,r})
0.128	0.64*K _n *N _{freq,n}	0. 8*K _n *N _{freq,n}	0.64* K _r * N _{freq,r}	0. 8* K _r * N _{freq,r}
	$(5*K_n *N_{freq,n})$	(6.25*K _n *N _{freq,n})	$(5^* K_r^* N_{freq,r})$	(6.25* N _{freq,r})
0.	Note (5*K _n	Note (5*K _n	Note (5* K _r *	Note (5* K _r *
128 <drx-< td=""><td>*N_{freq,n})</td><td>*N_{freq,n})</td><td>$N_{freq,r}$)</td><td>$N_{freq,r}$)</td></drx-<>	*N _{freq,n})	*N _{freq,n})	$N_{freq,r}$)	$N_{freq,r}$)
cycle≤2.56	r	, ,	·	,
Note: Time depends upon the DRX cycle in use				

Table 8.1.2.4.3.2-2: Requirement to measure UTRA TDD cells

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.

8.1.2.4.3.2.1 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in clause 9.

8.1.2.4.3.2.2 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in clause 9.

The UE shall not send any event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify,\,UTRA_TDD}$ defined in Clause 8.1.2.4.3.2 When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify,\, UTRA_TDD}$ defined in clause 8.1.2.4.3.2 and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{measurement_UTRA_TDD}$ defined in clause 8.1.2.4.3.2 provided the timing to that cell has not changed more than \pm 10 chips while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

8.1.2.4.3.2.3 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in clause 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.4.3.2.2.

8.1.2.4.4 E-UTRAN FDD – UTRAN TDD measurements

The requirements in clause 8.1.2.4.3 also apply for this section.

8.1.2.4.5 E-UTRAN FDD – GSM measurements

8.1.2.4.5.1 E-UTRAN FDD – GSM measurements when no DRX is used

The requirements in this clause apply only to UE supporting E-UTRAN FDD and GSM.

Measurements on GSM cells can be requested with BSIC verified.

In RRC_CONNECTED state when a supported measurement gap pattern sequence according to Table 8.1.2.1-1 is configured by E-UTRAN, or the UE supports capability of conducting such measurements without gaps, the UE shall continuously measure GSM cells, search for new GSM cells given in the monitored set and re-confirm the BSIC for already detected cells.

8.1.2.4.5.1.1 GSM carrier RSSI

This measurement shall be based on measurement gaps allocated for GSM carrier RSSI measurement as described in clause 8.1.2.1. A UE supporting GSM measurements shall measure minimum number of 10 GSM carrier RSSI measurement samples ($N_{GSM\ carrier\ RSSI}$) per measurement gap. In RRC_CONNECTED state the measurement period, $T_{Measurement\ Period,\ GSM}$, for the GSM carrier RSSI measurement is $K_n*N_{freq,n}*480$ ms. The parameters $N_{freq,n}$ and K_n are defined in clause 8.1.2.1.1.

The UE shall meet the measurement accuracy requirements stated for RXLEV in [8], when the given measurement time allows the UE to take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods.

8.1.2.4.5.1.2 BSIC verification

Measurements on a GSM cell can be requested with BSIC verified. The UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

- **Initial BSIC identification:** Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the E-UTRAN FDD and GSM cells. The UE shall trigger the initial BSIC identification within the available measurement gap pattern sequence. The requirements for BSIC re-confirmation can be found in clause 8.1.2.4.5.1.2.1.
- **BSIC re-confirmation:** Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The UE shall trigger the BSIC re-confirmation within the available measurement gap pattern. The requirements for BSIC re-confirmation can be found in clause 8.1.2.4.5.1.2.2.

If the network requests measurements on a GSM cell the UE shall behave as follows:

- The UE shall perform GSM carrier RSSI measurements according to clause 8.1.2.4.5.1 when a measurement gap pattern sequence is activated, or the UE supports capability of conducting such measurements without gaps.

The UE shall perform measurement reporting as defined in TS 36.331 [2].

- The UE shall perform BSIC identification. The UE shall use the most recently available GSM carrier RSSI measurement results for arranging GSM cells in signal strength order for performing BSIC identification.
- The UE shall perform BSIC re-confirmation on all the GSM cells that have been successfully identified.

- The UE shall perform all configured event evaluation for event-triggered reporting after the BSIC has been verified for a GSM cell. The UE shall use the most recently available GSM carrier RSSI measurement results in event evaluation and event-triggered reporting.
- Event-triggered and periodic reports shall be triggered according to TS 36.331 [2].

The BSIC of a GSM cell is considered to be "verified" if the UE has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification). Once a GSM cell has been identified the BSIC shall be re-confirmed at least once every $8*T_{re-confirm,GSM}$ seconds. Otherwise the BSIC of the GSM cell is considered as "non-verified". If a measurement gap pattern sequence is deactivated by the network after BSIC has been identified or verified, the UE shall consider the BSIC as non-verified.

 $T_{identify,GSM}$ indicates the maximum time allowed for the UE to decode the unknown BSIC of the GSM cell in one GSM BCCH carrier in the initial BSIC identification procedure.

 $T_{\text{re-confirm,GSM}}$ indicates the maximum time allowed for the re-confirmation of the BSIC of one GSM cell in the BSIC re-confirmation procedure.

The UE shall be able to decode a BSIC within a measurement gap when the time difference between the middle of the received GSM synchronisation burst at the UE and the middle of the effective measurement gap is within the limits specified in table 8.1.2.4.5.1.2-1.

Table 8.1.2.4.5.1.2-1: The gap length and maximum time difference for BSIC verification

Gap length [ms]	Maximum time difference [μs]
6	± 2350 μs

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [9].

8.1.2.4.5.1.2.1 Initial BSIC identification

This measurement shall be based on the measurement gaps used for Initial BSIC identification as described in clause 8.1.2.4.5.1.2.

The UE shall continuously attempt to decode the BSIC of SCH on the BCCH carrier of the 8 strongest BCCH carriers of the GSM cells indicated in the Inter-RAT cell info list. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BCCH carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value.

If the BSIC of the GSM BCCH carrier has been successfully decoded the UE shall immediately continue BSIC identification with the next GSM BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within $T_{identify,GSM}$ ms, the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall continue to try to perform BSIC identification of the next GSM BCCH carrier in signal strength order. The GSM BCCH carrier for which the BSIC identification failed shall not be re-considered for BSIC identification until BSIC identification attempts have been made for all the rest of the 8 strongest GSM BCCH carriers in the monitored set with unknown BSIC.

 $T_{identify,GSM}$ values are given for a set of reference gap patterns in table 8.1.2.4.5.1.2.1-1. The requirements in the table represent the time required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier. If interfrequency RSTD measurements are configured and the UE requires measurement gaps for performing such measurements, then $T_{identify,GSM}$ shall be based on the 80ms gap configuration.

Table 8.1.2.4.5.1.2.1-1

	T _{identify,gsm} (ms)		T _{reconfirm,}	_{gsm} (ms)
ceil(N _{freq,n} * K _n - M _{gsm})	40ms gap configuration (ID 0)	80ms gap configuration (ID 1)	40ms gap configuration (ID 0)	80ms gap configuration (ID 1)
0	2160	5280	1920	5040
1	5280	21760	5040	17280
2	5280	31680	5040	29280
3	19440	No requirement	13320	No requirement
4	31680	No requirement	29280	No requirement
5	31680	No requirement	29280	No requirement

8.1.2.4.5.1.2.2 BSIC re-confirmation

The UE shall maintain the timing information of up to 8 identified GSM cells. Initial timing information is obtained from the initial BSIC identification. The timing information shall be updated every time the BSIC is decoded.

For each measurement gap used for GSM BSIC reconfirmation as described in clause 8.1.2.4.5.1.2, the UE shall attempt to decode the BSIC falling within the measurement gap according to table 8.1.2.4.5.1.2.1-1. If more than one BSIC can be decoded within the same measurement gap, priority shall be given to the least recently decoded BSIC. If inter-frequency RSTD measurements are configured and the UE requires measurement gaps for performing such measurements, then $T_{\text{re-confirm},GSM}$ shall be based on the 80ms gap configuration.

If the UE fails to decode the BSIC after two successive attempts or if the UE has not been able to re-confirm the BSIC for a GSM cell within $T_{re-confirm,GSM}$ seconds, the UE shall abort the BSIC re-confirmation attempts for that GSM cell. The GSM cell shall be treated as a new GSM cell with unidentified BSIC and the GSM cell shall be moved to the initial BSIC identification procedure, see clause 8.1.2.4.5.1.2.1.

8.1.2.4.5.1.2a Enhanced BSIC verification

In addition to the BSIC verification requirements in clause 8.1.2.4.5.1.2, when the UE receives the GSM cell at levels down to 10 dB + the reference sensitivity level or reference interference levels as specified in [9] the BSIC identification requirement in table 8.1.2.4.5.1.2a-1 applies. The BSIC verification requirements in table 8.1.2.4.5.1.2a-1 shall apply when no DRX is used or when DRX cycle length $\leq 40 \text{ ms}$.

Table 8.1.2.4.5.1.2a-1

	T _{enhanced_identify,gsm} (ms)		T _{enhanced_reco}	nfirm,gsm (ms)
				40ms gap
		40ms gap		configuration
		configuration		when
		when		interfrequency
		interfrequency		RSTD
		RSTD		measurement
		measurement		is also
		is also		configured
		configured and		and the UE
		the UE requires		requires
		measurement		measurement
		gaps for		gaps for
ceil(N _{freq,n}	40ms gap	performing	40ms gap	performing
* K _n –	configuration	such	configuration	such
M _{gsm})	(ID 0)	measurements	(ID 0)	measurements
0	1320	2160	1080	1920

8.1.2.4.5.1.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in clause 9.

8.1.2.4.5.1.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in clause 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH.

The event triggered reporting delay requirement is valid when the UE for each GSM carrier in the monitored set can take the required number of samples during the measurement period $T_{Measurement\ Period,\ GSM}$ (see clause 8.1.2.4.5.1).

The event triggered measurement reporting delay for a GSM cell with verified BSIC , measured without L3 filtering shall be less than $2*T_{Measurement\ Period,\ GSM}$, where $T_{Measurement\ Period,\ GSM}$ is defined in clause 8.1.2.4.5.1. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

8.1.2.4.5.1.5 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in clause 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.4.5.1.4.

8.1.2.4.5.2 E-UTRAN FDD – GSM measurements when DRX is used

The requirements in this clause apply only to UE supporting E-UTRAN FDD and GSM.

Measurements on GSM cells can be requested with BSIC verified.

In RRC_CONNECTED state when a supported measurement gap pattern sequence according to Table 8.1.2.1-1 is configured by E-UTRAN, or the UE supports capability of conducting such measurements without gaps, the UE shall continuously measure GSM cells, search for new GSM cells given in the monitored set and re-confirm the BSIC for already detected cells. During DRX periods the UE may use other periods of time outside the specified measurement gap patterns. The UE is not required to make measurements of GSM cells during DRX periods if a measurement gap pattern has not been configured, unless the UE supports capability of conducting such measurements without gaps.

8.1.2.4.5.2.1 GSM carrier RSSI

This measurement shall be based on measurement gaps allocated for GSM carrier RSSI measurement as described in clause 8.1.2.1. A UE supporting GSM measurements shall measure minimum number of 10 GSM carrier RSSI measurement samples ($N_{GSM\ carrier\ RSSI}$) per DRX cycle. In RRC_CONNECTED state the measurement period, $T_{Measurement\ Period,\ GSM}$, for the GSM carrier RSSI measurement is shown in table 8.1.2.4.5.2.1-1. The parameters $N_{freq,n}$ and K_n are defined in clause 8.1.2.1.1.

Table 8.1.2.4.5.2.1-1: GSM measurement period for large DRX

DRX cycle length (s)	T _{measure,GSM} (s) (DRX cycles)	
≤0.064	Non DRX Requirements are	
	applicable	
0.064 <drx-cycle≤< td=""><td>Note (6*K_n*N_{freq,n})</td></drx-cycle≤<>	Note (6*K _n *N _{freq,n})	
0.08	·	
0.08 <drx-cycle≤ 2.56<="" td=""><td>Note $(5*K_n*N_{freq,n})$</td></drx-cycle≤>	Note $(5*K_n*N_{freq,n})$	
Note: Time depends upon the DRX cycle in use		

The UE shall meet the measurement accuracy requirements stated for RXLEV in [8], when the given measurement time allows the UE to take at least 3 GSM carrier RSSI samples per GSM carrier in the monitored set during the measurement period.

In case the UE is not able to acquire the required number of samples per GSM carrier during one measurement period, the UE shall measure as many GSM carriers as possible during that measurement period using at least 3 samples per GSM carrier. The GSM carriers that were not measured during that measurement period shall be measured in the following measurement periods.

8.1.2.4.5.2.2 BSIC verification

Measurements on a GSM cell can be requested with BSIC verified. The UE shall be able to report the GSM cells with BSIC verified for those cells where the verification of BSIC has been successful.

The procedure for BSIC verification on a GSM cell can be divided into the following two tasks:

- **Initial BSIC identification:** Includes searching for the BSIC and decoding the BSIC for the first time when there is no knowledge about the relative timing between the E-UTRAN FDD and GSM cells.
- **BSIC re-confirmation:** Tracking and decoding the BSIC of a GSM cell after initial BSIC identification is performed. The UE shall trigger the BSIC re-confirmation within the available measurement gap pattern

If the network requests measurements on a GSM cell, the UE shall behave as follows:

- The UE shall perform GSM carrier RSSI measurements according to clause 8.1.2.4.5.2.1 when a measurement gap pattern sequence is activated, or the UE supports capability of conducting such measurements without gaps.

The UE shall perform measurement reporting as defined in TS 36.331 [2].

- The UE shall perform BSIC identification. The UE shall use the most recently available GSM carrier RSSI measurement results for arranging GSM cells in signal strength order for performing BSIC identification.
- The UE shall perform BSIC re-confirmation on all the GSM cells that have been successfully identified.
- The UE shall perform all configured event evaluation for event-triggered reporting after the BSIC has been verified for a GSM cell. The UE shall use the most recently available GSM carrier RSSI measurement results in event evaluation and event-triggered reporting.
- Event-triggered and periodic reports shall be triggered according to TS 36.331 [2].

The BSIC of a GSM cell is considered to be "verified" if the UE has decoded the SCH of the BCCH carrier and identified the BSIC at least one time (initial BSIC identification). Once a GSM cell has been identified the BSIC shall be re-confirmed at least once every 30 seconds. Otherwise the BSIC of the GSM cell is considered as "non-verified".

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in [9].

8.1.2.4.5.2.2.1 Initial BSIC identification

This measurement shall be made on GSM cells that are requested with BSIC verified.

For DRX cycle length \leq 40 ms, the initial GSM BSIC identification requirements corresponding to the non DRX requirements as specified in clause 8.1.2.4.5.1.2.1 shall apply.

For DRX cycle length > 40 ms, the UE shall make at least one attempt every $K_n*N_{freq,n}*30s$ to decode the BSIC of SCH on the BCCH carrier of the 8 strongest BCCH carriers of the GSM cells indicated in the Inter-RAT cell info list. If the UE has not successfully decoded the BSIC of the GSM BCCH carrier within $K_n*N_{freq,n}*60s$, the UE shall abort the BSIC identification attempts for that GSM BCCH carrier. The UE shall give priority for BSIC decoding attempts in decreasing signal strength order to BCCH carriers with unknown BSIC. The strongest BCCH carrier is defined as the BCCH carrier having the highest measured GSM carrier RSSI value. The parameters $N_{freq,n}$ and K_n are defined in clause 8.1.2.1.1.

If the BSIC of the GSM BCCH carrier has been successfully decoded the UE shall continue BSIC identification with the next GSM BCCH carrier, in signal strength order, with unknown BSIC. The GSM cell for which the BSIC has been successfully identified shall be moved to the BSIC re-confirmation procedure.

8.1.2.4.5.2.2.2 BSIC re-confirmation

The UE shall maintain the timing information of up to 8 identified GSM cells. Initial timing information is obtained from the initial BSIC identification. The timing information shall be updated every time the BSIC is decoded.

For DRX cycle length \leq 40 ms, the GSM BSIC re-conformation requirements corresponding to the non DRX requirements as specified in clause 8.1.2.4.5.1.2.2 shall apply.

For DRX cycle length > 40 ms, at least every $K_n*N_{freq,n}*30$ seconds, the UE shall attempt to decode the BSIC of each identified GSM cell. If the UE fails to decode the BSIC after two successive attempts or if the UE has not been able to re-confirm the BSIC for a GSM cell within $K_n*N_{freq,n}*60$ seconds, the UE shall abort the BSIC re-confirmation attempts for that GSM cell. The GSM cell shall be treated as a new GSM cell with unidentified BSIC and the GSM cell shall be moved to the initial BSIC identification procedure, see clause 8.1.2.4.5.2.2.1. The parameters $N_{freq,n}$ and k_n are defined in clause 8.1.2.1.1.

8.1.2.4.5.2.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in clause 9.

8.1.2.4.5.2.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in clause 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH.

The event triggered reporting delay requirement is valid when the UE for each GSM carrier in the monitored set can take the required number of samples during the measurement period $T_{Measurement\ Period,\ GSM}$ (see clause 8.1.2.4.5.2.1).

The event triggered measurement reporting delay for a GSM cell with verified BSIC , measured without L3 filtering shall be less than $2*T_{Measurement\ Period,\ GSM}$, where $T_{Measurement\ Period,\ GSM}$ is defined in clause 8.1.2.4.5.2.1. When L3 filtering is used or IDC autonomous denial is configured or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, an additional delay can be expected.

8.1.2.4.5.2.5 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in clause 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.4.5.2.4.

8.1.2.4.6 E-UTRAN TDD – GSM measurements

The requirements in clause 8.1.2.4.5 also apply for this section.

8.1.2.4.7 E-UTRAN FDD – UTRAN FDD measurements for SON

8.1.2.4.7.1 Identification of a new UTRA FDD cell for SON

No explicit neighbour list is provided to the UE for identifying a UTRA cell for SON. The UE shall identify and report only the strongest cell when requested by the network for the purpose of SON.

8.1.2.4.7.1.1 Requirements when no DRX is used

When no DRX is used, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new cell within:

$$T_{\text{identify, UTRA_FDD}} = T_{\text{basic_identify_UTRA_FDD}} \cdot \frac{480}{\text{Tinter1}} \cdot K_n N_{\text{freq,n}} \quad ms \text{ (normal requirement)}$$

and

$$\mathbf{T}_{\text{identify, UTRA_FDD}} = \mathbf{T}_{\text{basic_identify_UTRA_FDD}} \cdot \frac{480}{\text{Tinter1}} \cdot K_r N_{\textit{freq,r}} \quad \textit{ms} \, (\text{reduced requirement})$$

 $T_{basic_identify_UTRA_FDD} = 300$ ms. This is the time period used in the above equation where the maximum allowed time for the UE to identify a new UTRA FDD cell is defined.

A cell shall be considered identifiable following conditions are fulfilled:

- CPICH Ec/Io \geq -20 dB,
- SCH_Ec/Io ≥ -17 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

If the UE is unable to identify the UTRA cell for SON within 8*T_{identify, UTRA_FDD} ms, the UE may stop searching UTRA cells for SON.

8.1.2.4.7.1.2 Requirements when DRX is used

When DRX is used, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new cell within $T_{identify,\,UTRA_FDD}$ as defined in table 8.1.2.4.7.1.2-1.

DRX cycle length (s)	T _{identify, UTRA_FDD} (s) (DRX cycles) (normal requirement)		T _{identify, UTRA_FDD} (s) (DRX cycles) (reduced requirement)	
	Gap period = 40 ms	Gap period = 80 ms	Gap period = 40 ms	Gap period = 80 ms
≤0.04	Non DRX	Non DRX	Non DRX	Non DRX
	Requirements in	Requirements in	Requirements in	Requirements in
	clause 8.1.2.4.7.1.1are	clause 8.1.2.4.7.1.1	clause 8.1.2.4.7.1.1are	clause 8.1.2.4.7.1.1
	applicable	are applicable	applicable	are applicable
0.04 <drx< td=""><td>Note (45*K_n* N_{freq,n})</td><td>Note (95*K_n * N_{freq,n})</td><td>Note (45*K_r* N_{freq,r})</td><td>Note (95*K_r * N_{freq,r})</td></drx<>	Note (45*K _n * N _{freq,n})	Note (95 * K _n * N _{freq,n})	Note (45*K _r * N _{freq,r})	Note (95*K _r * N _{freq,r})
cycle≤0.08			·	·
0.128	3.84*K _n * N _{freq,n} (30*K _n	8.0*K _n * N _{freq,n}	3.84*K _r * N _{freq,r} (30*K _r *	8.0*K _r * N _{freq,r} (62.5*K _r
	* N _{freq,n})	(62.5*K _n * N _{freq,n})	N _{freq,r})	* N _{freq,r})
0.16	4.0*K _n * N _{freq,n} (25*K _n *	8.0*K _n * N _{freq,n} (50*K _n	4.0*K _r * N _{freq,r} (25*K _r *	8.0*K _r * N _{freq,r} (50*K _r *
	N _{freq,n})	* N _{freq,n})	N _{freq,r})	N _{freq,r})
0.256	6.4*K _n * N _{freq,n} (25*K _n *	8.96*K _n * N _{freq,n}	6.4*K _r * N _{freq,r} (25*K _r *	8.96*K _r * N _{freq,r} (35*K _r
	N _{freq,n})	(35*K _n * N _{freq,n})	N _{freq,r})	* N _{freq,r})
0.32	8*K _n * N _{freq,n} (25*K _n *	8.96*K _n * N _{freq,n}	8*K _r * N _{freq,r} (25*K _r *	8.96*K _r * N _{freq,r} (28*K _r
	N _{freq,n})	(28*K _n * N _{freq,n})	N _{freq,r})	* N _{freq,r})
0.32 <drx< td=""><td>Note (25*K_n * N_{freq,n})</td><td>Note (25*K_n * N_{freq,n})</td><td>Note (25*K_r * N_{freq,r})</td><td>Note (25*K_r * N_{freq,r})</td></drx<>	Note (25*K _n * N _{freq,n})	Note (25*K _n * N _{freq,n})	Note (25*K _r * N _{freq,r})	Note (25*K _r * N _{freq,r})
cycle≤2.56	, -		•	·
Note: Time depends	upon the DRX cycle in us	e		

Table 8.1.2.4.7.1.2-1: Requirement to identify a new UTRA FDD cell for SON

A cell shall be considered identifiable provided following conditions are fulfilled:

- CPICH Ec/Io \geq -20 dB,
- SCH_Ec/Io ≥ -17 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected.

If the UE is unable to identify the UTRA cell for SON within $8*T_{identify, UTRA_FDD}$ seconds, the UE may stop searching UTRA cells for SON; $T_{identify, UTRA_FDD}$ is defined in table 8.1.2.4.7.1.2-1.

8.1.2.4.7.1.3 Reporting Delay

The UE shall not report the physical cell identity of an identifiable cell for SON as long as the reporting criteria are not fulfilled.

The reporting delay is defined as the time between the identification of the strongest cell for SON until the UE starts to transmit its physical cell identity over the Uu interface. This requirement assumes that the reporting of the physical cell identity is not delayed by other RRC signalling on the DCCH. This reporting delay excludes a delay uncertainty resulted when inserting the physical cell identity of the strongest cell for SON to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This reporting delay excludes any delay caused by unavailability of UL resources for UE sending the physical cell identity of the strongest cell for SON.

The reporting delay of the physical cell identity of the strongest cell for SON without L3 filtering shall be less than $T_{identify,\,UTRA_FDD}$ defined in clause 8.1.2.4.7.1.1 and in clause 8.1.2.4.7.1.2 for non DRX and DRX cases respectively. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.1.2.4.8 E-UTRAN TDD – UTRAN FDD measurements for SON

The requirements in clause 8.1.2.4.7 also apply for this section.

8.1.2.4.9 E-UTRAN FDD – cdma2000 1xRTT measurements

UE shall perform cdma2000 1xRTT measurements according to the procedure defined in [15] on the cdma2000 1xRTT neighbor cells indicated by the serving eNode B. If measurement gaps are required, the UE shall perform cdma2000 1xRTT measurements only during the measurement gaps configured by the serving eNode B.

8.1.2.4.9.1A E-UTRAN FDD – cdma2000 1xRTT measurements when no DRX is used

When measurement gaps are scheduled for CDMA2000 1xRTT inter RAT measurements, or the UE supports capability of conducting such measurements without gaps, the UE physical layer shall be capable of reporting CDMA2000 1xRTT Pilot Strength measurements to higher layers with measurement accuracy as specified in Clause 9.5, corresponding to a 90% measurement success rate, with measurement period given by

$$\mathbf{T}_{\text{measurement_CDMA2000_lx}} = \mathbf{T}_{\text{basic_measurement_CDMA2000_lx}} \cdot N_{\textit{Freq},n} \cdot K_{n} \cdot S_{\textit{gap}}$$

where $T_{basic_measurement_CDMA2000_1x} = 100$ ms and the measurement gap specific scale factor S_{gap} is based on the measurement gap pattern in use as defined in Table 8.1.2.4.9.1-1. If inter-frequency RSTD measurements are configured and the UE requires measurement gaps for performing such measurements, then S_{gap} shall be based to the Gap Pattern Id 1.

Table 8.1.2.4.9.1-1: Gap Pattern Specific Scale Factor

Gap Pattern Id	S_gap
0	32/3
1	64/3

8.1.2.4.9.1 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in clause 9.

The measurement reporting delay of each periodic report is defined as the time between the end of the last measurement period and the moment when the UE starts to transmit the measurement report over the Uu interface. This delay shall be less than T_{71m} defined in [15] for each periodic report. This measurement reporting delay excludes a delay which is caused by the unavailability of the uplink resources for the UE to send the measurement report.

8.1.2.4.10 E-UTRAN TDD – cdma2000 1xRTT measurements

The requirements in clause 8.1.2.4.9 also apply for this section.

8.1.2.4.11 E-UTRAN FDD – HRPD measurements

UE shall perform HRPD measurements according to the procedure defined in [11] on the HRPD neighbor cells indicated by the serving eNode B. If measurement gaps are required, the UE shall perform HRPD measurements only during the measurement gaps configured by the serving eNode B.

8.1.2.4.12 E-UTRAN TDD – HRPD measurements

The requirements in clause 8.1.2.4.11 also apply for this section.

8.1.2.4.13 E-UTRAN TDD – UTRAN TDD measurements for SON

8.1.2.4.13.1 Identification of a new UTRA TDD cell for SON

No explicit neighbour list is provided to the UE for identifying a UTRA TDD cell for SON. The UE shall identify and report only the strongest cell when requested by the network for the purpose of SON.

8.1.2.4.13.1.1 Requirements when no DRX is used

When no DRX is used, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new cell within:

$$T_{\text{identify, UTRA_TDD}} = T_{\text{basic_identify_UTRA_TDD}} \cdot \frac{480}{T_{\text{interl}}} \cdot K_n \cdot N_{Freq,n} \quad ms \text{ (normal requirement)}$$

and

$$\mathbf{T}_{\text{identify, UTRA_TDD}} = \mathbf{T}_{\text{basic_identify_UTRA_TDD}} \cdot \frac{480}{\mathbf{T}_{\text{interl}}} \cdot K_r \cdot N_{\textit{Freq,r}} \quad \textit{ms} \; (\text{reduced requirement})$$

 $T_{basic_identify_UTRA_TDD} = 800 \text{ ms.}$ This is the time period used in the above equation where the maximum allowed time for the UE to identify a new UTRA TDD cell is defined.

A cell shall be considered identifiable following conditions are fulfilled:

- P-CCPCH Ec/Io \geq -8 dB,
- DwPCH_Ec/Io \geq -5 dB.

When L3 filtering is used an additional delay can be expected.

If the UE is unable to identify the UTRA TDD cell for SON within 8*T_{identify, UTRA_TDD} ms, the UE may stop searching UTRA TDD cells for SON.

8.1.2.4.13.1.2 Requirements when DRX is used

When DRX is used, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new cell within $T_{identify, \, UTRA_TDD}$ as defined in table 8.1.2.4.13.1.2-1.

DRX cycle length (s)	T _{identify, UTRA_TDD} (s) (DRX cycles)		T _{identify, UTRA_TDD} (s) (DRX cycles)	T _{identify, UTRA_TDD} (s) (DRX cycles)
	Gap period = 40 ms	Gap period = 80 ms	Gap period = 40 ms	Gap period = 80 ms
≤0.16	Non DRX Requirements in clause 8.1.2.4.3.1 are applicable	Non DRX Requirements in clause 8.1.2.4.3.1 are applicable	Non DRX Requirements in clause 8.1.2.4.3.1 are applicable	Non DRX Requirements in clause 8.1.2.4.3.1 are applicable
0.16 <drx cycle≤0.256</drx 	Note (25*K _n * N _{freq,n})	Note (50*K _n * N _{freq,n})	Note (25*K _r * N _{freq,r})	Note (50*K _r * N _{freq,r})
0.256 <drx cycle≤0.32</drx 	Note (25*K _n * N _{freq,n})	Note (45*K _n * N _{freq,n})	Note (25*K _r * N _{freq,r})	Note (45*K _r * N _{freq,r})
0.32 <drx cycle≤2.56</drx 	Note (25*K _n * N _{freq,n})	Note (25*K _n * N _{freq,n})	Note (25*K _r * N _{freq,r})	Note (25*K _r * N _{freq,r})
Note: Time depends upon the DRX cycle in use				

Table 8.1.2.4.13.1.2-1: Requirement to identify a new UTRA TDD cell for SON

A cell shall be considered identifiable provided following conditions are fulfilled:

- P-CCPCH Ec/Io > -8 dB,
- DwPCH Ec/Io > -5 dB.

When L3 filtering is used an additional delay can be expected.

If the UE is unable to identify the UTRA TDD cell for SON within $8*T_{identify,\ UTRA_TDD}$ seconds, the UE may stop searching UTRA TDD cells for SON; $T_{identify,\ UTRA_TDD}$ is defined in table 8.1.2.4.13.1.2-1.

8.1.2.4.13.1.3 Reporting Delay

The UE shall not report the physical cell identity of an identifiable cell for SON as long as the reporting criteria are not fulfilled.

The reporting delay is defined as the time between the identification of the strongest cell for SON until the UE starts to transmit its physical cell identity over the Uu interface. This requirement assumes that the reporting of the physical cell identity is not delayed by other RRC signalling on the DCCH. This reporting delay excludes a delay uncertainty resulted when inserting the physical cell identity of the strongest cell for SON to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This reporting delay excludes any delay caused by unavailability of UL resources for UE sending the physical cell identity of the strongest cell for SON.

The reporting delay of the physical cell identity of the strongest cell for SON without L3 filtering shall be less than $T_{identify,\, UTRA_TDD}$ defined in clause 8.1.2.4.13.1.1 and in clause 8.1.2.4.13.1.2 for non DRX and DRX cases respectively. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.1.2.4.14 E-UTRAN FDD – UTRAN TDD measurements for SON

The requirements in clause 8.1.2.4.13 also apply for this section.

8.1.2.4.15 E-UTRAN FDD – cdma2000 1xRTT measurements for SON ANR

8.1.2.4.15.1 Identification of a new cdma2000 1xRTT cell for SON ANR

No explicit neighbour list is provided to the UE for identifying a cdma2000 1xRTT cell for SON ANR. The UE shall identify and report only the strongest cell when requested by the network for the purpose of SON ANR.

8.1.2.4.15.1.1 Requirement when no DRX is used

When measurement gaps are scheduled for CDMA2000 1xRTT inter RAT measurements, or the UE supports capability of conducting such measurements without gaps, the UE physical layer shall be capable of reporting CDMA2000 1xRTT

Pilot Strength measurements to higher layers with measurement accuracy as specified in Clause 9.5, corresponding to a 90% measurement success rate, with measurement period given by

$$\mathbf{T}_{\text{measurement_CDMA2000_1x}} = \mathbf{T}_{\text{basic_measurement_CDMA2000_1x}} \cdot N_{\textit{Freq,n}} \cdot K_{\textit{n}} \cdot S_{\textit{gap}}$$

where $T_{basic_measurement_CDMA2000_1x} = 100$ ms and the measurement gap specific scale factor S_{gap} is based on the measurement gap pattern in use as defined in Table 8.1.2.4.15.1.1-1. If inter-frequency RSTD measurements are configured and the UE requires measurement gaps for performing such measurements, then S_{gap} shall be based to the Gap Pattern Id 1.

Table 8.1.2.4.15.1.1-1: Gap Pattern Specific Scale Factor

Gap Pattern Id	S _{gap}
0	32/3
1	64/3

If the UE is unable to identify the CDMA2000 1xRTT cell for SON ANR within [TBD] ms, the UE may stop searching CDMA2000 1xRTT cells for SON ANR.

8.1.2.4.15.1.2 Reporting Delay

The UE shall not report the physical cell identity of an identifiable cell for SON ANR as long as the reporting criteria are not fulfilled.

The reporting delay is defined as the time between the identification of the strongest cell for SON ANR until the UE starts to transmit its physical cell identity over the Uu interface. This delay shall be less than T_{71m} defined in [15]. This measurement reporting delay excludes a delay which is caused by the unavailability of the uplink resources for the UE to send the measurement report.

8.1.2.4.16 E-UTRAN TDD – cdma2000 1xRTT measurements for SON ANR

The requirements in clause 8.1.2.4.15 also apply for this section.

8.1.2.4.17 E-UTRAN FDD-UTRAN FDD measurements with autonomous gaps

The requirements in this clause apply only to UE supporting E-UTRA FDD and UTRA FDD.

8.1.2.4.17.1 Identification of a new CGI of UTRA FDD cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of UTRA FDD cell. The UE shall identify and report the CGI when requested by the network for the purpose of 'reportCGI'. The UE may make autonomous gaps in both downlink reception and uplink transmission for decoding SFN and receiving UTRAN MIB and SIB3 messages according to clause 5.5.3.1 of TS 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or not, the UE shall be able to identify a new CGI of UTRA FDD cell within:

$$T_{\text{identify_CGI, UTRAN FDD}} = 630 + 40 * SIB3_REP \ ms$$

where SIB3_REP is the repetition period at which the UTRAN cell schedules SIB3 blocks in units of frames specified in TS 25.331 [7], provided that the UTRAN cell has been already identified by the UE.

This requirement is applicable for UTRA FDD target cell configurations where the information required to make the SI report can be determined from the MIB and SIB3 alone, and MIB and SIB3 are not segmented into multiple TTIs. Additionally, for the requirement to be applicable, the reception conditions shall be such that the system frame number of the target UTRA FDD cell, the MIB and SIB3 can each be successfully decoded in no more than four attempts.

According to the reception conditions:

A cell shall be considered identifiable following conditions are fulfilled:

- CPICH Ec/Io \geq -20 dB,

- SCH_Ec/Io ≥ -17 dB for at least one channel tap and SCH_Ec/Ior is equally divided between primary synchronisation code and secondary synchronisation code. When L3 filtering is used an additional delay can be expected. The system frame number, the MIB and SIB3 of the target cell shall be considered decodable provided the BCH demodulation requirements are met according to [29].

The requirement for identifying a new CGI of an UTRA FDD cell within $T_{identify_CGI,\,UTRAN\,FDD}$ is applicable when no DRX is used as well as when all the DRX cycles specified in TS 36.331 [2] are used.

8.1.2.4.17.2 CGI Reporting Delay

The CGI reporting delay occurs due to the delay uncertainty when inserting the CGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the CGI reporting may be delayed until the next DRX cycle. If IDC autonomous denial is configured, an additional delay can be expected.

8.1.2.4.18 E-UTRAN TDD-UTRAN FDD measurements with autonomous gaps

The requirements in this clause apply only to UE supporting E-UTRA TDD and UTRA FDD.

8.1.2.4.18.1 Identification of a new CGI of UTRA FDD cell with autonomous gaps

The requirements in clause 8.1.2.4.17.1 also apply for this section.

8.1.2.4.18.2 CGI Reporting Delay

The requirements in clause 8.1.2.4.17.2 also apply for this section.

8.1.2.4.19 E-UTRAN FDD – WLAN measurements

8.1.2.4.19.1 Introduction

The requirements in this section shall apply for a UE capable of E-UTRA FDD and LTE-WLAN aggregation [2].

8.1.2.4.19.2 Requirements

8.1.2.4.19.2.1 E-UTRAN FDD – WLAN measurements when no DRX is used

In the RRC_CONNECTED state when no DRX is used the measurement period for IEEE 802.11 RSSI shall be $T_{\rm IEEE\ RSSI}$ as defined in table 8.1.2.4.19.2.1-1.

The value of T_{IEEE_RSSI} depends upon whether the RSSI measurement is performed on the serving access point (AP) or on a neighbour AP and in case of the neighbour AP whether the neighbour AP is known or unknown to the UE:

- Measurement of known single neighbor AP is time-sensitive and is performed on the AP for which information about the operating channel is known to the UE; and
- Measurement of unknown neighbor AP is not time-sensitive and is performed on the AP for which information about the operating channel is not known to the UE.

The UE shall be capable of performing IEEE 802.11 RSSI measurements for certain minimum number of APs during $T_{\text{IEEE_RSSI}}$ as defined in table 8.1.2.4.19.2.1-1. The UE physical layer shall be capable of reporting RSSI measurements to higher layers with the measurement period of $T_{\text{IEEE_RSSI}}$.

Table 8.1.2.4.19.2.1-1: IEEE 802.11 RSSI measurement period

IEEE 802.11 RSSI measurement	T _{IEEE_RSSI} [seconds]	
Type of Measurement	Minimum number of APs measured during T _{IEEE_RSSI}	
Measurement of serving AP	1	0.5
Measurement of known neighbor AP on a single channel	1	5
Measurement of multiple unknown neighbor APs	3	30

The IEEE 802.11 RSSI measurement accuracy for all measured access points shall be fulfilled according to the accuracy as specified in the sub-clause 9.7.1.

8.1.2.4.19.2.2 E-UTRAN FDD – WLAN measurements when DRX is used

In the RRC_CONNECTED state when no DRX is used the measurement period for IEEE 802.11 RSSI shall be $T_{RSSI\ DRX}$ as defined in table 8.1.2.4.19.2.2-1.

The value of $T_{IEEE_RSSI_DRX}$ depends upon whether the RSSI measurement is performed on the serving access point (AP) or on a neighbour AP and in case of the neighbour AP whether the neighbour AP is known or unknown to the UE:

- Measurement of known single neighbor AP is time-sensitive and is performed on the AP for which information about the operating channel is known to the UE; and
- Measurement of unknown neighbor AP is not time-sensitive and is performed on the AP for which information about the operating channel is not known to the UE

The UE shall be capable of performing IEEE 802.11 RSSI measurements for certain minimum number of APs during $T_{IEEE_RSSI_DRX}$ as defined in table 8.1.2.4.19.2.2-1. The UE physical layer shall be capable of reporting RSSI measurements to higher layers with the measurement period of $T_{IEEE_RSSI_DRX}$.

0.002 ≤ DRX-cycle ≤ 0.320	MAX (0.5, 5*L _{DRX})
0.002 ≤ DRX-cycle ≤ 0.320	MAX (5, 25*L _{DRX})
0.320 < DRX-cycle ≤ 2.56	MAX (5, 20*L _{DRX})
0.002 ≤ DRX-cycle ≤ 0.320	MAX (30, 150*L _{DRX})
0.320 < DRX-cycle ≤ 2.56	MAX (30, 120*L _{DRX})
0	0.002 ≤ DRX-cycle ≤ 0.320 0.320 < DRX-cycle ≤ 2.56 0.002 ≤ DRX-cycle ≤ 0.320

Table 8.1.2.4.19.2.2-1: Requirement to measure IEEE 802.11 RSSI in DRX

The IEEE 802.11 RSSI measurement accuracy for all measured access points shall be fulfilled according to the accuracy as specified in the sub-clause 9.7.1.

8.1.2.4.19.2.3 Periodic Reporting

Reported measurements in periodically triggered measurement reports shall meet the requirements in clause 9.7.1.

8.1.2.4.19.2.4 Event Triggered Reporting

Reported measurements in event triggered measurement reports shall meet the requirements in clause 9.7.1.

The UE shall not send any event triggered measurement reports, as long as the reporting criteria is not fulfilled.

The measurement reporting delay is defined as the time between any event that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T_{IEEE_RSSI} when no DRX is used as defined in section 8.1.2.4.19.2.1 and $T_{IEEE_RSSI_DRX}$ when DRX is used as defined in section 8.1.2.4.19.2.2. When L3 filtering is used or IDC autonomous denial or the UE is performing reception and/or transmission for ProSe Direct Discovery and/or ProSe Direct Communication, is configured an additional delay can be expected.

8.1.2.4.19.2.5 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in clause 9.7.1.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.4.19.2.3.

8.1.2.4.20 E-UTRAN TDD – WLAN measurements

The requirements in this section shall apply for a UE capable of E-UTRA TDD and LTE-WLAN Aggregation [2]. The requirements in clause 8.1.2.4.19 also apply for this section.

8.1.2.5 E-UTRAN OTDOA Intra-Frequency RSTD Measurements

All intra-frequency RSTD measurement requirements specified in Sections 8.1.2.5.1 and 8.1.2.5.2 shall apply without DRX as well as for all the DRX cycles specified in TS 36.331 [2] and all eDRX cycles.

8.1.2.5.1 E-UTRAN FDD Intra-Frequency OTDOA Measurements

When the physical layer cell identities of neighbour cells together with the OTDOA assistance data are provided, the UE shall be able to detect and measure intra-frequency RSTD, specified in TS 36.214 [4], for at least n=16 cells, including the reference cell, on the same carrier frequency f1 as that of the reference cell within

 $T_{RSTD\ IntraFreqFDD,\ E-UTRAN}$ ms as given below (see also Figure 8.1.2.5.1-1):

$$T_{RSTD IntraFreqFDD, E-UTRAN} = T_{PRS} \cdot (M-1) + \Delta \qquad ms$$
,

where

 $T_{RSTD IntraFreqFDD, E-UTRAN}$ is the total time for detecting and measuring at least n cells,

 $T_{\rm PRS}$ is the cell-specific positioning subframe configuration period as defined in TS 36.211 [16],

M is the number of PRS positioning occasions as defined in Table 8.1.2.5.1-1, where each PRS positioning occasion comprises of N_{PRS} ($1 \le N_{PRS} \le 6$) consecutive downlink positioning subframes defined in TS 36.211 [16], and

 $\Delta = 160 \cdot \left\lceil \frac{n}{M} \right\rceil$ ms is the measurement time for a single PRS positioning occasion which includes the sampling time and the processing time.

Table 8.1.2.5.1-1: Number of PRS positioning occasions within $T_{RSTD\;IntraFreqFDD,\;E-UTRAN}$

Positioning subframe	Number of PRS positioning occasions M		
configuration period $T_{ m PRS}$	f1 Note1	f1 and f2 Note2	
160 ms	16	32	
>160 ms	8	16	

Note 1: When only intra-frequency RSTD measurements are performed over cells belonging to the serving FDD carrier frequency f1.

Note 2: When intra-frequency RSTD and inter-frequency RSTD measurements are performed over cells belonging to the serving FDD carrier frequency f1 and one inter-frequency carrier frequency f2, respectively.

The UE physical layer shall be capable of reporting RSTD for the reference cell and all the neighbor cells i out of at least (n-1) neighbor cells within $T_{RSTD IntraFreqFDD, E-UTRAN}$ provided:

$$(PRS \, \hat{E}_s / Iot)_{ref} \ge -6 \, dB$$
 for all Frequency Bands for the reference cell, $(PRS \, \hat{E}_s / Iot)_i \ge -13 \, dB$ for all Frequency Bands for neighbour cell i ,

 $(PRS \hat{E}_s / Iot)_{ref}$ and $(PRS \hat{E}_s / Iot)_i$ conditions apply for all subframes of at least $L = \frac{M}{2}$ PRS positioning

PRP 1,2|dBm according to Annex B.2.5 for a corresponding Band

 $PRS\,\hat{E}_s$ / Iot is defined as the ratio of the average received energy per PRS RE during the useful part of the symbol to the average received power spectral density of the total noise and interference for this RE, where the ratio is measured over all REs which carry PRS.

The time $T_{\text{RSTD IntraFreqFDD, E-UTRAN}}$ starts from the first subframe of the PRS positioning occasion closest in time after both the OTDOA-RequestLocationInformation message and the OTDOA assistance data in the OTDOA-ProvideAssistanceData message as specified in TS 36.355 [24], are delivered to the physical layer of the UE as illustrated in Figure 8.1.2.5.1-1.

The RSTD measurement accuracy for all measured neighbor cells i shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.10.1.

If the intra-frequency handover occurs while intra-frequency RSTD measurements are being performed then the UE shall complete the ongoing OTDOA measurement session. The UE shall also meet the intra-frequency OTDOA measurement and accuracy requirements. However in this case the RSTD measurement period

($T_{\text{RSTD IntraFreqFDD, E-UTRAN, HO}}$) shall be according to the following expression:

$$\mathbf{T}_{\text{RSTD IntraFreqFDD, E-UTRAN, HO}} = \mathbf{T}_{\text{RSTD IntraFreqFDD, E-UTRAN}} + K \times T_{\text{PRS}} + T_{\text{HO}} \qquad \textit{ms} \; ,$$

where:

K is the number of times the intra-frequency handover occurs during $T_{\text{RSTD Intra-Freq-FDD. E-UTRAN. HO}}$.

 $T_{\rm HO}$ is the time during which the intra-frequency RSTD measurement may not be possible due to intra-frequency handover; it can be up to 45 ms.

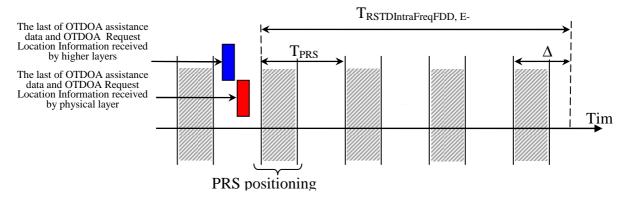


Figure 8.1.2.5.1-1. Illustration of the RSTD reporting time requirement in an FDD system.

Furthermore, due to the intra-frequency handover the UE shall meet the RSTD measurement accuracy for a PRS bandwidth which is not larger than the minimum channel bandwidth of all the PCells during the RSTD measurement period.

8.1.2.5.1.1 RSTD Measurement Reporting Delay

This requirement assumes that the measurement report is not delayed by other LPP signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

8.1.2.5.2 E-UTRAN TDD Intra-Frequency OTDOA Measurements

When the physical layer cell identities of neighbour cells together with the OTDOA assistance data are provided, the UE shall be able to detect and measure intra-frequency RSTD, specified in TS 36.214 [4], for at least n=16 cells, including the reference cell, on the same carrier frequency f1 as that of the reference cell within

 $T_{RSTD\ IntraFreqTDD,\ E-UTRAN}$ ms as given below:

$$T_{RSTD IntraFreqTDD, E-UTRAN} = T_{PRS} \cdot (M-1) + \Delta$$
 ms

where

 $T_{RSTD\ IntraFreqTDD,\ E-UTRAN}$ is the total time for detecting and measuring at least n cells,

 $T_{\rm PRS}$ is the cell-specific positioning subframe configuration period as defined in TS 36.211 [16],

M is the number of PRS positioning occasions as defined in Table 8.1.2.5.2-1, where a PRS positioning occasion is as defined in Clause 8.1.2.5.1, and

 $\Delta = 160 \cdot \left[\frac{n}{M} \right]$ ms is the measurement time for a single PRS positioning occasion which includes the sampling time

and the processing time.

Table 8.1.2.5.2-1: Number of PRS positioning occasions within $T_{RSTD\;IntraFreqTDD,\;E-UTRAN}$

Positioning subframe	Number of PRS positioning occasions M		
configuration period $T_{ m PRS}$	f1 Note1	f1 and f2 Note2	
160 ms	16	32	
>160 ms	8	16	

Note 1: When only intra-frequency RSTD measurements are performed over cells belonging to the serving TDD carrier frequency f1.

Note 2: When intra-frequency RSTD and inter-frequency RSTD measurements are performed over cells belonging to the serving TDD carrier frequency f1 and one inter-frequency carrier frequency f2 respectively.

The UE physical layer shall be capable of reporting RSTD for the reference cell and all the neighbor cells i out of at least (n-1) neighbor cells within $T_{\text{RSTD IntraFreqTDD, E-UTRAN}}$ provided:

 $(PRS \hat{E}_s / Iot)_{ref} \ge -6 dB$ for all Frequency Bands for the reference cell,

 $(PRS \, \hat{E}_s / Iot)_i \ge -13 \, dB$ for all Frequency Bands for neighbour cell i,

 $(PRS \hat{E}_s / Iot)_{ref}$ and $(PRS \hat{E}_s / Iot)_i$ conditions apply for all subframes of at least $L = \frac{M}{2}$ PRS positioning

occasions,

PRP 1,2|dBm according to Annex B.2.5 for a corresponding Band

PRS \hat{E}_s / Iot is as defined in Clause 8.1.2.5.1.

The time $T_{RSTD\,IntraFreqTDD,\,E-UTRAN}$ starts from the first subframe of the PRS positioning occasion closest in time after both the OTDOA-RequestLocationInformation message and the OTDOA assistance data in the OTDOA-ProvideAssistanceData message as specified in TS 36.355 [24], are delivered to the physical layer of the UE.

The RSTD measurement accuracy for all measured neighbor cells i shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.10.1.

If the intra-frequency handover occurs while intra-frequency RSTD measurements are being performed then the UE shall complete the ongoing OTDOA measurement session. The UE shall also meet the intra-frequency OTDOA measurement and accuracy requirements. However in this case the RSTD measurement period

 $(T_{RSTD IntraFreqTDD, E-UTRAN, HO})$ shall be according to the following expression:

$$T_{\text{RSTD IntraFreqTDD, E-UTRAN, HO}} = T_{\text{RSTD IntraFreqTDD, E-UTRAN}} + K \times T_{\text{PRS}} + T_{\text{HO}} \qquad ms ,$$

where:

K is the number of times the intra-frequency handover occurs during $T_{\text{RSTD Intra}\text{FreqTDD, E-UTRAN, HO}}$,

 $T_{\rm HO}$ is the time during which the intra-frequency RSTD measurement may not be possible due to intra-frequency handover; it can be up to 45 ms.

Furthermore, due to the intra-frequency handover the UE shall meet the RSTD measurement accuracy for a PRS bandwidth which is not larger than the minimum channel bandwidth of all the PCells during the RSTD measurement period.

The intra-frequency requirements in this clause (8.1.2.5.2) shall apply for all TDD special subframe configurations specified in TS 36.211 [16] and for the TDD uplink-downlink configurations as specified in Table 8.1.2.5.2-2.

Table 8.1.2.5.2-2: TDD uplink-downlink subframe configurations applicable for TDD intra-frequency requirements

PRS Transmission Bandwidth [RB]	Applicable TDD uplink-downlink configurations
6, 15	1, 2, 3, 4 and 5
25, 50, 75, 100	0, 1, 2, 3, 4, 5 and 6
Note: Uplink-downlink configurations are specified in Table 4.2-2 in TS 36.211 [16].	

8.1.2.5.2.1 RSTD Measurement Reporting Delay

This requirement assumes that the measurement report is not delayed by other LPP signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

8.1.2.6 E-UTRAN Inter-Frequency OTDOA Measurements

All inter-frequency RSTD measurement requirements specified in Sections 8.1.2.6.1-8.1.2.6.4 shall apply, provided that

- the UE is capable of inter-frequency RSTD measurements for OTDOA [24], and
- either the measurement gap pattern ID # 0 specified in Clause 8.1.2.1 is used or the UE supports capability of conducting inter-frequency measurements without gaps.

All inter-frequency RSTD measurement requirements specified in Sections 8.1.2.6.1-8.1.2.6.4 shall apply without DRX as well as for all the DRX cycles specified in TS 36.331 [2] and all eDRX cycles.

8.1.2.6.1 E-UTRAN FDD-FDD Inter-Frequency OTDOA Measurements

When the physical layer cell identities of neighbour cells together with the OTDOA assistance data are provided, the UE shall be able to detect and measure inter-frequency RSTD, specified in TS 36.214 [4], for at least n=16 cells, including the reference cell, within $T_{RSTD \, InterFreqFDD, \, E-UTRAN}$ ms as given below:

$$T_{RSTD InterFreqFDD, E-UTRAN} = T_{PRS} \cdot (M-1) + \Delta$$
 ms ,

where

 $T_{RSTD InterFreeFDD, E-UTRAN}$ is the total time for detecting and measuring at least n cells,

 $T_{\rm PRS}$ is the the largest value of the cell-specific positioning subframe configuration period, defined in TS 36.211 [16], among the measured n cells including the reference cell,

M is the number of PRS positioning occasions as defined in Table 8.1.2.6.1-1, where a PRS positioning occasion is as defined in clause 8.1.2.5.1,

 $\Delta = 160 \cdot \left\lceil \frac{n}{M} \right\rceil$ ms is the measurement time for a single PRS positioning occasion which includes the sampling time and the processing time, and

the n cells are distributed on up to two carrier frequencies including a serving carrier frequency and one inter-frequency carrier.

Table 8.1.2.6.1-1: Number of PRS positioning occasions within $T_{RSTD\;InterFreoFDD\;E-UTRAN}$

Positioning subframe	Number of PRS positioning occasions M	
configuration period $T_{ m PRS}$	f2 Note1	f1 and f2 Note2
160 ms	16	32
>160 ms	8	16

Note 1: When inter-frequency RSTD measurements are performed over the reference cell and neighbour cells, which belong to the FDD inter-frequency carrier frequency f2.

Note 2: When inter-frequency RSTD measurements are performed over the reference cell and the neighbour cells, which belong to the serving FDD carrier frequency f1 and the FDD inter-frequency carrier frequency f2 respectively.

The UE physical layer shall be capable of reporting RSTD for the reference cell and all the neighbor cells i out of at least (n-1) neighbor cells within $T_{\text{RSTD InterFreqFDD, E-UTRAN}}$ provided:

 $(PRS \hat{E}_s / Iot)_{ref} \ge -6 dB$ for all Frequency Bands for the reference cell,

 $(PRS \, \hat{E}_s / Iot)_i \ge -13 \, dB$ for all Frequency Bands for neighbour cell i,

 $\left(\text{PRS } \hat{\mathbf{E}}_{s} / \text{Iot} \right)_{ref}$ and $\left(\text{PRS } \hat{\mathbf{E}}_{s} / \text{Iot} \right)_{i}$ conditions apply for all subframes of at least $L = \frac{M}{2}$ PRS positioning

occasions,

PRP 1,2|dBm according to Annex B.2.6 for a corresponding Band

PRS \hat{E}_s / Iot is as defined in Clause 8.1.2.5.1.

The time $T_{RSTD\,InterFreqFDD,\,E-UTRAN}$ starts from the first subframe of the PRS positioning occasion closest in time after both the OTDOA-RequestLocationInformation message and the OTDOA assistance data in the OTDOA-ProvideAssistanceData message as specified in TS 36.355 [24], are delivered to the physical layer of the UE.

If the inter-frequency handover occurs while inter-frequency RSTD measurements are being performed, and the inter-frequency carrier on which RSTD is measured becomes the new serving carrier frequency after the inter-frequency handover, the UE shall complete the ongoing OTDOA measurement session. The UE shall also meet the inter-frequency OTDOA measurement and accuracy requirements. However in this case the RSTD measurement period ($T_{RSTD\ InterFreqFDD,\ E-UTRAN,\ HO}$) shall be according to the following expression:

$$\mathbf{T}_{\text{RSTD InterFreqFDD, E-UTRAN, HO}} = \mathbf{T}_{\text{RSTD InterFreqFDD, E-UTRAN}} + K \times T_{\text{PRS}} + T_{\text{HO}} \qquad \textit{ms} \; ,$$

where:

K is the number of times the inter-frequency handover occurs during $T_{\text{RSTD InterFreqFDD, E-UTRAN, HO}}$,

 $T_{\rm HO}$ is the time during which the inter-frequency RSTD measurement may not be possible due to inter-frequency handover; it can be up to 45 ms.

The RSTD measurement accuracy for all measured neighbor cells *i* shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.10.2.

Furthermore, due to the inter-frequency handover the UE shall meet the RSTD measurement accuracy for a PRS bandwidth which is not larger than the minimum channel bandwidth of those PCells on whose carriers RSTD measurement is performed during the RSTD measurement period.

8.1.2.6.1.1 RSTD Measurement Reporting Delay

This requirement assumes that the measurement report is not delayed by other LPP signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI_{DCCH}. This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

8.1.2.6.2 E-UTRAN TDD-FDD Inter-Frequency OTDOA Measurements

When the physical layer cell identities of neighbour cells together with the OTDOA assistance data are provided, the UE shall be able to detect and measure inter-frequency RSTD, specified in TS 36.214 [4], for at least n=16 cells,

including the reference cell, within $T_{RSTD\ InterFreqTDDFDD,\ E-UTRAN}$ ms as given below:

$$T_{\text{RSTD InterFreqTDDFDD, E-UTRAN}} = T_{\text{PRS}} \cdot (M - 1) + \Delta$$
 ms

where

 $T_{RSTD\ InterFreeTDDFDD\ E-UTRAN}$ is the total time for detecting and measuring at least n cells,

 $T_{\rm PRS}$ is the largest value of the cell-specific positioning subframe configuration period, defined in TS 36.211 [16], among the measured n cells including the reference cell,

M is the number of PRS positioning occasions as defined in Table 8.1.2.6.2-1, where a PRS positioning occasion is as defined in clause 8.1.2.5.1,

 $\Delta = 160 \cdot \left\lceil \frac{n}{M} \right\rceil$ ms is the measurement time for a single PRS positioning occasion which includes the sampling time

and the processing time, and

the n cells are distributed on up to two carrier frequencies including a serving carrier frequency and one inter-frequency carrier.

Table 8.1.2.6.2-1: Number of PRS positioning occasions within $T_{RSTD\ InterFreqTDDFDD,\ E-UTRAN}$

Positioning subframe	Number of PRS positioning occasions M	
configuration period $T_{ m PRS}$	f2 Note1	f1 and f2 Note2
160 ms	16	32
>160 ms	8	16

NOTE 1: When inter-frequency RSTD measurements are performed over the reference cell and neighbour cells, which belong to the FDD inter-frequency carrier frequency f2.

NOTE 2: When inter-frequency RSTD measurements are performed over the reference cell and the neighbour cells, which belong to the serving TDD carrier frequency f1 and the FDD inter-frequency carrier frequency f2 respectively.

The UE physical layer shall be capable of reporting RSTD for the reference cell and all the neighbor cells i out of at least (n-1) neighbor cells within $T_{\text{RSTD InterFeqTDDFDD.E-UTRAN}}$, provided:

 $(PRS \hat{E}_s / Iot)_{ref} \ge -6 dB$ for all Frequency Bands for the reference cell,

 $(PRS \, \hat{E}_s / Iot)_i \ge -13 \, dB$ for all Frequency Bands for neighbour cell i,

 $\left(\text{PRS }\hat{\mathbf{E}}_{s} / \text{Iot}\right)_{ref}$ and $\left(\text{PRS }\hat{\mathbf{E}}_{s} / \text{Iot}\right)_{i}$ conditions apply for all subframes of at least $L = \frac{M}{2}$ PRS positioning occasions,

PRP $1,2|_{dBm}$ according to Annex B.2.6 for a corresponding Band,

PRS \hat{E}_s / Iot is as defined in Clause 8.1.2.5.1.

The time $T_{RSTD\,InterFeqTDDFDD,E-UTRAN}$ starts from the first subframe of the PRS positioning occasion closest in time after both the OTDOA-RequestLocationInformation message and the OTDOA assistance data in the OTDOA-ProvideAssistanceData message as specified in TS 36.355 [24], are delivered to the physical layer of the UE.

If the inter-frequency handover occurs while inter-frequency RSTD measurements are being performed, and the inter-frequency carrier on which RSTD is measured becomes the new serving carrier frequency after the inter-frequency handover, the UE shall complete the ongoing OTDOA measurement session. The UE shall also meet the inter-frequency OTDOA measurement and accuracy requirements. However in this case the RSTD measurement period ($T_{RSTD\ InterFreqTDDFDD,\ E-UTRAN,\ HO}$) shall be according to the following expression:

$$\mathbf{T}_{\text{RSTD InterFreqTDDFDD, E-UTRAN, HO}} = \mathbf{T}_{\text{RSTD InterFreqTDDFDD, E-UTRAN}} + K \times T_{\text{PRS}} + T_{\text{HO}} \qquad \textit{ms}$$

where:

K is the number of times the inter-frequency handover occurs during $T_{\text{RSTD InterFreqTDDFDD, E-UTRAN, HO}}$,

 $T_{\rm HO}$ is the time during which the inter-frequency RSTD measurement may not be possible due to inter-frequency handover; it can be up to 45 ms.

The RSTD measurement accuracy for all measured neighbor cells *i* shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.10.2.

Furthermore, due to the inter-frequency handover the UE shall meet the RSTD measurement accuracy for a PRS bandwidth which is not larger than the minimum channel bandwidth of those PCells on whose carriers RSTD measurement is performed during the RSTD measurement period.

The inter-frequency requirements in this clause (8.1.2.6.2) shall apply for all TDD special subframe configurations specified in TS 36.211 [16] and for the TDD uplink-downlink configurations as specified in Table 8.1.2.6.2-2.

Table 8.1.2.6.2-2: TDD uplink-downlink subframe configurations applicable for TDD-FDD interfrequency requirements

PRS Tran	smission Bandwidth [RB]	Applicable TDD uplink-downlink configurations
	6, 15	1, 2, 3, 4 and 5
	25, 50, 75, 100	0, 1, 2, 3, 4, 5 and 6
NOTE: U	NOTE: Uplink-downlink configurations are specified in Table 4.2-2 in TS 36.211 [16].	

8.1.2.6.2.1 RSTD Measurement Reporting Delay

This requirement assumes that that the measurement report is not delayed by other LPP signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

8.1.2.6.3 E-UTRAN TDD-TDD Inter-Frequency OTDOA Measurements

When the physical layer cell identities of neighbour cells together with the OTDOA assistance data are provided, the UE shall be able to detect and measure inter-frequency RSTD, specified in TS 36.214 [4], for at least n=16 cells, including the reference cell, within $T_{RSTD \, InterFreqTDD, E-UTRAN}$ ms as given below:

$$T_{\text{RSTD InterFreqTDD, E-UTRAN}} = T_{\text{PRS}} \cdot (M - 1) + \Delta$$
 ms

where

 $T_{RSTD\ InterFreeTDD.\ E-UTRAN}$ is the total time for detecting and measuring at least n cells,

 $T_{\rm PRS}$ is the largest value of the cell-specific positioning subframe configuration period, defined in TS 36.211 [16], among the measured n cells including the reference cell,

M is the number of PRS positioning occasions as defined in Table 8.1.2.6.1-1, where a PRS positioning occasion is as defined in clause 8.1.2.5.1,

$$\Delta = 160 \cdot \left[\frac{n}{M} \right]$$
 ms is the measurement time for a single PRS positioning occasion which includes the sampling time

and the processing time, and

the n cells are distributed on up to two carrier frequencies including a serving carrier frequency and one inter-frequency carrier.

Table 8.1.2.6.3-1: Number of PRS positioning occasions within $T_{RSTD\;InterFreqTDD,\;E-UTRAN}$

Positioning subframe	Number of PRS positioning occasions $\it M$	
configuration period $T_{ m PRS}$	f2 Note1	f1 and f2 Note2
160 ms	16	32
>160 ms	8	16

Note 1: When inter-frequency RSTD measurements are performed over the reference cell and neighbour cells, which belong to the TDD inter-frequency carrier frequency f2.

Note 2: When inter-frequency RSTD measurements are performed over the reference cell and the neighbour cells, which belong to the serving TDD carrier frequency f1 and the TDD inter-frequency carrier frequency f2 respectively.

The inter-frequency requirements in this clause (8.1.2.6.3) shall apply for all TDD special subframe configurations specified in TS 36.211 [16] and for the TDD uplink-downlink configurations as specified in Table 8.1.2.6.3-2.

Table 8.1.2.6.3-2: TDD uplink-downlink subframe configurations applicable for inter-frequency requirements

PRS T	ransmission Bandwidth [RB]	Applicable TDD uplink-downlink configurations
	6, 15	3, 4 and 5
	25	1, 2, 3, 4, 5 and 6
	50, 75, 100	0, 1, 2, 3, 4, 5 and 6
Note 1:	Uplink-downlink configurations a	re specified in Table 4.2-2 in TS 36.211 [16].
Note2:	Note2: For UEs capable of performing inter-frequency measurements without measurement gaps,	
	TDD uplink-downlink subframe configurations as specified in Table 8.1.2.5.2-2 shall apply.	

The UE physical layer shall be capable of reporting RSTD for the reference cell and all the neighbor cells i out of at least (n-1) neighbor cells within $T_{\text{RSTD InterFreqTDD, E-UTRAN}}$ provided:

$$(PRS \, \hat{E}_s / Iot)_{ref} \ge -6 \, dB$$
 for all Frequency Bands for the reference cell, $(PRS \, \hat{E}_s / Iot)_i \ge -13 \, dB$ for all Frequency Bands for neighbour cell i ,

 $(PRS \hat{E}_s / Iot)_{ref}$ and $(PRS \hat{E}_s / Iot)_i$ conditions apply for all subframes of at least $L = \frac{M}{2}$ PRS positioning

PRP $1.2|_{dBm}$ according to Annex B.2.6 for a corresponding Band

PRS \hat{E}_s / Iot is as defined in Clause 8.1.2.5.1.

The time $T_{RSTD\,InterFreqTDD,\,E-UTRAN}$ starts from the first subframe of the PRS positioning occasion closest in time after both the OTDOA-RequestLocationInformation message and the OTDOA assistance data in the OTDOA-ProvideAssistanceData message as specified in TS 36.355 [24], are delivered to the physical layer of the UE.

If the inter-frequency handover occurs while inter-frequency RSTD measurements are being performed, and the inter-frequency carrier on which RSTD is measured becomes the new serving carrier frequency after the inter-frequency handover, the UE shall complete the ongoing OTDOA measurement session. The UE shall also meet the inter-frequency OTDOA measurement and accuracy requirements. However in this case the RSTD measurement period ($T_{RSTD\ InterFreqTDD,E-UTRAN,HO}$) shall be according to the following expression:

$$T_{\text{RSTD InterFreqTDD, E-UTRAN, HO}} = T_{\text{RSTD InterFreqTDD, E-UTRAN}} + K \times T_{\text{PRS}} + T_{\text{HO}}$$
 ms,

where:

K is the number of times the inter-frequency handover occurs during $T_{\text{RSTD InterFreqTDD, E-UTRAN, HO}}$,

 $T_{\rm HO}$ is the time during which the inter-frequency RSTD measurement may not be possible due to inter-frequency handover; it can be up to 45 ms.

The RSTD measurement accuracy for all measured neighbor cells i shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.10.2.

Furthermore, due to the inter-frequency handover the UE shall meet the RSTD measurement accuracy for a PRS bandwidth which is not larger than the minimum channel bandwidth of those PCells on whose carriers RSTD measurement is performed during the RSTD measurement period.

8.1.2.6.3.1 RSTD Measurement Reporting Delay

This requirement assumes that that the measurement report is not delayed by other LPP signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI_{DCCH}. This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

8.1.2.6.4 E-UTRAN FDD-TDD Inter-Frequency OTDOA Measurements

When the physical layer cell identities of neighbour cells together with the OTDOA assistance data are provided, the UE shall be able to detect and measure inter-frequency RSTD, specified in TS 36.214 [4], for at least n=16 cells, including the reference cell, within $T_{RSTD \, InterFeqFDDTDD,E-UTRAN}$ ms as given below:

$$T_{RSTD InterFeqFDDTDD, E-UTRAN} = T_{PRS} \cdot (M-1) + \Delta$$
 ms

where

 $T_{RSTD InterFeqEDDTDD E-LITRAN}$ is the total time for detecting and measuring at least n cells,

 $T_{\rm PRS}$ is the largest value of the cell-specific positioning subframe configuration period, defined in TS 36.211 [16], among the measured n cells including the reference cell,

M is the number of PRS positioning occasions as defined in Table 8.1.2.6.4-1, where a PRS positioning occasion is as defined in clause 8.1.2.5.1,

 $\Delta = 160 \cdot \left\lceil \frac{n}{M} \right\rceil$ ms is the measurement time for a single PRS positioning occasion which includes the sampling time and the processing time, and

the n cells are distributed on up to two carrier frequencies including a serving carrier frequency and one inter-frequency carrier.

Table 8.1.2.6.4-1: Number of PRS positioning occasions within $T_{RSTD\ InterFeqFDDTDD.E-UTRAN}$

Positioning subframe		Number of PRS positioning occasions M			
configuration period $T_{ m PRS}$		f2 Note1	f1 and f2 Note2		
	160 ms	ms 16 32			
	>160 ms 8 16		16		
Note 1:	lote 1: When inter-frequency RSTD measurements are performed over the reference cell and neighbour cells, which belong to the TDD inter-frequency carrier frequency f2.				
Note 2: When inter-frequency RSTD measurements are performed over the reference cell and the neighbour cells, which belong to the serving FDD carrier frequency f1 and the TDD inter-frequency carrier frequency f2 respectively.					

The UE physical layer shall be capable of reporting RSTD for the reference cell and all the neighbor cells i out of at least (n-1) neighbor cells within $T_{\text{RSTD InterFeqFDDTDD,E-UTRAN}}$, provided:

 $(PRS \hat{E}_s / Iot)_{ref} \ge -6 dB$ for all Frequency Bands for the reference cell,

 $(PRS \hat{E}_s / Iot)_i \ge 13 dB$ for all Frequency Bands for neighbour cell i,

 $(PRS \hat{E}_s / Iot)_{ref}$ and $(PRS \hat{E}_s / Iot)_i$ conditions apply for all subframes of at least $L = \frac{M}{2}$ PRS positioning occasions,

PRP 1,2|dBm according to Annex B.2.6 for a corresponding Band

 $PRS\,\hat{E}_s$ / $Iot\,$ is as defined in Clause 8.1.2.5.1.

The time $T_{RSTD\ InterFeqFDDTDD,E-UTRAN}$ starts from the first subframe of the PRS positioning occasion closest in time after both the OTDOA-RequestLocationInformation message and the OTDOA assistance data in the OTDOA-ProvideAssistanceData message as specified in TS 36.355 [24], are delivered to the physical layer of the UE.

If the inter-frequency handover occurs while inter-frequency RSTD measurements are being performed, and the inter-frequency carrier on which RSTD is measured becomes the new serving carrier frequency after the inter-frequency handover, the UE shall complete the ongoing OTDOA measurement session. The UE shall also meet the inter-frequency OTDOA measurement and accuracy requirements. However in this case the RSTD measurement period ($T_{RSTD\ InterFreqFDDTDD,\ E-UTRAN,\ HO}$) shall be according to the following expression:

$$\mathbf{T}_{\text{RSTD InterFreqFDDTDD, E-UTRAN, HO}} = \mathbf{T}_{\text{RSTD InterFreqFDDTDD, E-UTRAN}} + K \times T_{\text{PRS}} + T_{\text{HO}} \qquad \textit{ms} \; ,$$

where:

K is the number of times the inter-frequency handover occurs during $T_{\text{RSTD InterFreqFDDTDD, E-UTRAN, HO}}$,

 T_{HO} is the time during which the inter-frequency RSTD measurement may not be possible due to inter-frequency handover; it can be up to 45 ms.

The RSTD measurement accuracy for all measured neighbor cells *i* shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.10.2.

Furthermore, due to the inter-frequency handover the UE shall meet the RSTD measurement accuracy for a PRS bandwidth which is not larger than the minimum channel bandwidth of those PCells on whose carriers RSTD measurement is performed during the RSTD measurement period.

The inter-frequency requirements in this clause (8.1.2.6.4) shall apply for all TDD special subframe configurations specified in TS 36.211 [16] and for the TDD uplink-downlink configurations as specified in Table 8.1.2.6.4-2.

Table 8.1.2.6.4-2: TDD uplink-downlink subframe configurations applicable for inter-frequency requirements

PRS Ti	ransmission Bandwidth [RB]	Applicable TDD uplink-downlink configurations
	6, 15	3, 4 and 5
	25	1, 2, 3, 4, 5 and 6
50, 75, 100 0, 1, 2, 3, 4, 5 and 6		0, 1, 2, 3, 4, 5 and 6
Note 1:	te 1: Uplink-downlink configurations are specified in Table 4.2-2 in TS 36.211 [16].	
Note2:	2: For UEs capable of performing inter-frequency measurements without measurement gaps,	
	TDD uplink-downlink subframe configurations as specified in Table 8.1.2.5.2-2 shall apply.	

8.1.2.6.4.1 RSTD Measurement Reporting Delay

This requirement assumes that that the measurement report is not delayed by other LPP signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI_{DCCH}. This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

8.1.2.7 E-UTRAN E-CID Measurements

8.1.2.7.1 E-UTRAN FDD UE Rx-Tx Time Difference Measurements

When no DRX is used the physical layer measurement period of the UE Rx-Tx time difference measurement shall be 200 ms.

When DRX is used in RRC_CONNECTED state the physical layer measurement period ($T_{measure_FDD_UE_Rx_Tx1}$) of the UE Rx-Tx time difference measurement shall be as specified in table 8.1.2.7.1-1.

Table 8.1.2.7.1-1: FDD UE Rx-Tx time difference measurement requirement when DRX is used

DRX cycle length (s)	T _{measure_FDD_UE_Rx_Tx1} (s) (DRX cycles)	
≤0.04	0.2 (Note1)	
0.04 <drx-cycle≤2.56< th=""><th>Note2 (5)</th></drx-cycle≤2.56<>	Note2 (5)	
Note1: Number of DRX cycle depends upon the DRX cycle in use		
Note2: Time depends upon the DRX cycle in use		

If the UE is performing UE Rx-Tx time difference measurement while the PCell is changed due to the handover then the UE shall restart the Rx-Tx measurement on the new cell. In this case the UE shall also meet the UE Rx-Tx time difference measurement and accuracy requirements. However the physical layer measurement period of the UE Rx-Tx measurement shall not exceed $T_{measure_FDD_UE_Rx_Tx3}$ as defined in the following expression:

$$T_{measure_FDD_UE_Rx_Tx3} = (K+1)*(T_{measure_FDD_UE_Rx_Tx1}) + K*T_{PCcell_change_handover}$$

Where:

K is the number of times the PCell is changed over the measurement period (T_{measure_FDD_UE_Rx_Tx3}),

T_{PCell} change handover is the time necessary to change the PCell due to handover; it can be up to 45 ms.

If the UE supporting E-UTRA carrier aggregation when configured with the secondary component carrier(s) is performing UE Rx-Tx time difference measurement while the PCell is changed regardless whether the primary

component carrier is changed or not then the UE shall restart the Rx-Tx measurement on the new PCell. In this case the UE shall also meet the UE Rx-Tx time difference measurement and accuracy requirements corresponding to the new PCell. However the physical layer measurement period of the UE Rx-Tx measurement shall not exceed $T_{measure_FDD_UE_Rx_Tx2}$ as defined in the following expression:

Where:

N is the number of times the PCell is changed over the measurement period (T_{measure_FDD_UE_Rx_Tx2}),

 $T_{PCell_change_CA}$ is the time necessary to change the PCell; it can be up to 25 ms.

If IDC autonomous denial is configured then the UE shall also meet the requirements, provided not more than 30 IDC autonomous denial suframes are configured over an IDC autonomous denial validity period of at least 200 ms.

The measurement accuracy for the UE Rx-Tx time difference measurement when DRX is used as well as when no DRX is used shall be as specified in the sub-clause 9.1.9.

8.1.2.7.1.1 UE Rx-Tx Measurement Reporting Delay

This requirement assumes that the measurement report is not delayed by other RRC or LPP signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in subclause 9.1.9.

8.1.2.7.2 E-UTRAN TDD UE Rx-Tx Time Difference Measurements

When no DRX is used the physical layer measurement period of the UE Rx-Tx time difference measurement shall be 200 ms.

When DRX is used in RRC_CONNECTED state the physical layer measurement period ($T_{measure_TDD_UE_Rx_Tx1}$) of the UE Rx-Tx time difference measurement shall be as specified in table 8.1.2.7.2-1.

Table 8.1.2.7.2-1: TDD UE Rx-Tx time difference measurement requirement when DRX is used

DRX cycle length (s)	T _{measure_TDD_UE_Rx_Tx1} (s) (DRX cycles)
≤0.04	0.2 (Note1)
0.04 <drx-cycle≤2.56< th=""><th>Note2 (5)</th></drx-cycle≤2.56<>	Note2 (5)
Note1: Number of DRX cycle depends upon the DRX cycle in use	
Note2: Time depends upon the DRX cycle in use	

If the UE is performing UE Rx-Tx time difference measurement while the PCell is changed due to the handover then the UE shall restart the Rx-Tx measurement on the new cell. In this case the UE shall also meet the UE Rx-Tx time difference measurement and accuracy requirements. However the physical layer measurement period of the UE Rx-Tx measurement shall not exceed $T_{measure_TDD_UE_Rx_Tx3}$ as defined in the following expression:

$$T_{measure_TDD_UE_Rx_Tx3} = (K+1)*(T_{measure_TDD_UE_Rx_Tx1}) + K*T_{PCell_change_handover}$$

Where:

K is the number of times the PCell is changed over the measurement period ($T_{measure_TDD_UE_Rx_Tx3}$),

T_{PCell change handover} is the time necessary to change the PCell due to handover; it can be up to 45 ms.

If the UE supporting E-UTRA carrier aggregation when configured with the secondary component carrier(s) is performing UE Rx-Tx time difference measurement while the PCell is changed regardless whether the primary component carrier is changed or not then the UE shall restart the Rx-Tx measurement on the new PCell. In this case the UE shall also meet the UE Rx-Tx time difference measurement and accuracy requirements corresponding to the new PCell. However the physical layer measurement period of the UE Rx-Tx measurement shall not exceed $T_{measure_TDD_UE_Rx_Tx2}$ as defined in the following expression:

$$T_{measure\ TDD\ UE\ Rx\ Tx2} = (N+1)*(T_{measure\ TDD\ UE\ Rx\ Tx1}) + N*T_{PCell\ change\ CA}$$

Where:

N is the number of times the PCell is changed over the measurement period (T_{measure TDD UE Rx Tx2}),

T_{PCell change CA} is the time necessary to change the PCell; it can be up to 25 ms.

If IDC autonomous denial is configured then the UE shall also meet the requirements, provided not more than 30 IDC autonomous denial suframes are configured over an IDC autonomous denial validity period of at least 200 ms.

The measurement accuracy for the UE Rx-Tx time difference measurement when DRX is used as well as when no DRX is used shall be as specified in the sub-clause 9.1.9.

For UE, which does not support simultaneous reception and transmission for inter-band TDD CA specified in TS 36.331 [2], and is compliant to the requirements for inter-band CA with uplink in one E-UTRA band and without simultaneous Rx/Tx specified in TS 36.101 [5], the UE Rx-Tx time difference measurement requirements in Section 8.1.2.7.2 shall apply also with different TDD UL/DL subframe configurations and/or different special subframe configurations used in CCs of different bands, under the following additional conditions:

- UE is not simultaneously scheduled in UL and DL on the different CCs, and
- At least one downlink and one uplink subframes per radio frame are available for the UE Rx-Tx time difference measurement in the measured cell.

8.1.2.7.2.1 UE Rx-Tx Measurement Reporting Delay

This requirement assumes that that the measurement report is not delayed by other RRC or LPP signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in subclause 9.1.9.

8.1.2.7.3 E-UTRAN FDD Intra-frequency E-CID RSRP and RSRQ Measurements

8.1.2.7.3.1 Introduction

The requirements in section 8.1.2.7.3 shall apply provided the UE has received ECID-RequestLocationInformation message from E-SMLC via LPP requesting the UE to report E-CID E-UTRAN FDD intra-frequency RSRP and RSRQ measurements [24].

8.1.2.7.3.2 Measurement Requirements

The requirements in section 8.1.2.2.1 and section 8.1.2.8.1 also apply for this section except the measurement reporting requirements. The measurement reporting requirements for E-CID RSRP and RSRQ are defined in section 8.1.2.7.3.3.

8.1.2.7.3.3 Measurement Reporting Delay

This requirement assumes that that the measurement report is not delayed by other LPP signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.1.2 and 9.1.5 respectively.

8.1.2.7.4 E-UTRAN TDD Intra-frequency E-CID RSRP and RSRQ Measurements

8.1.2.7.4.1 Introduction

The requirements in section 8.1.2.7.4 shall apply provided the UE has received ECID-RequestLocationInformation message from E-SMLC via LPP requesting the UE to report E-CID E-UTRAN TDD intra-frequency RSRP and RSRQ measurements [24].

8.1.2.7.4.2 Measurement Requirements

The requirements in section 8.1.2.2.2 and section 8.1.2.8.2 also apply for this section except the measurement reporting requirements. The measurement reporting requirements for E-CID RSRP and RSRQ are defined in section 8.1.2.7.4.3.

8.1.2.7.4.3 Measurement Reporting Delay

This requirement assumes that that the measurement report is not delayed by other LPP signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in section 9.1.2 and 9.1.5 respectively.

8.1.2.8 E-UTRAN intra-frequency measurements under time domain measurement resource restriction

The requirements in sections 8.1.2.8.1 and 8.1.2.8.2 shall apply for cells for which time domain measurement resource restriction patterns for performing E-UTRAN FDD intra-frequency measurements and E-UTRAN TDD intra-frequency measurements, respectively, are configured by higher layers (TS 36.331 [2]), provided that also the following additional conditions are fulfilled:

The time domain measurement resource restriction pattern configured for the measured cell indicates at least one subframe per radio frame for performing the intra-frequency measurements, and

Four symbols containing CRS are available in all subframes indicated by the time domain measurement resource restriction pattern.

For cells which are not configured for measurements in the subframes indicated by the time-domain measurement resource restriction pattern, the corresponding requirements specified in Clause 8.1.2.2 apply.

8.1.2.8.1 E-UTRAN FDD intra-frequency measurements

8.1.2.8.1.1 E-UTRAN intra-frequency measurements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable FDD intra-frequency cell within

$$T_{\text{identify_intra_eICIC}} = T_{\text{basic_identify_E-UTRA_FDD_eICIC, intra}} \cdot \frac{T_{\text{Measurement_Period_eICIC, Intra}}}{T_{\text{Intra}}} \quad \textit{ms}$$

where

 $T_{basic_identify_E\text{-}UTRA_FDD_eICIC,\;intra}$ is 1000 ms.

 T_{Intra} is the minimum time available for intra-frequency measurements, during the measurement period with an arbitrarily chosen timing. The time is assumed to be available for performing intra-frequency measurements whenever the receiver is guaranteed to be active on the intra-frequency carrier.

A cell shall be considered detectable when

- RSRP related side conditions given in Sections 9.1.2.3 and 9.1.2.4 and RSRQ related side conditions given in Clause 9.1.5.2 are fulfilled for a corresponding Band,

- SCH_RP and SCH Ês/Iot according to Annex B.2.8 for a corresponding Band.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period_eICIC,\ Intra}$. If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra-frequency measurements is 200 ms. When no measurement gaps are activated, the UE shall be capable of performing RSRP and RSRQ measurements for 8 identified intra-frequency cells, including also the cells which are not measured in the subframes indicated by the time-domain measurement resource restriction pattern, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When measurement gaps are activated the UE shall be capable of performing measurements for at least $Y_{\text{measurement_intra_eICIC}}$ cells , where $Y_{\text{measurement_intra_eICIC}}$ is defined in the following equation. If the UE has identified more than $Y_{\text{measurement_intra_eICIC}}$ cells, the UE shall perform measurements of at least 8 identified intra-frequency cells but the reporting rate of RSRP and RSRQ measurements of cells from UE physical layer to higher layers may be decreased.

$$\mathbf{Y}_{\text{measurement_intra_eICIC}} = Floor \left\{ \boldsymbol{X}_{\text{basic_measurement_FDD_eICIC}} \cdot \frac{\mathbf{T}_{\text{Intra}}}{\mathbf{T}_{\text{Measurement_Period_eICIC, Intra}} \right\} \text{ cells}$$

where

 $X_{basic_measurement_FDD_eICIC} = 8$ (cells)

 $T_{Measurement_Period_eICIC,\ Intra} = 200\ ms$ is the measurement period for intra-frequency RSRP and RSRQ measurements.

The RSRP and RSRQ measurement accuracy for the measured cells configured with a time-domain measurement resource restriction pattern for RRM intra-frequency measurements shall be as specified in the sub-clauses 9.1.2.3, 9.1.2.4, and 9.1.5.2, respectively.

8.1.2.8.1.1.1 Measurement Reporting Requirements

8.1.2.8.1.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.2.3, 9.1.2.4, and 9.1.5.2, respectively.

8.1.2.8.1.1.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.2.3, 9.1.2.4, and 9.1.5.2, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.8.1.1.1.3.

8.1.2.8.1.1.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.2.3, 9.1.2.4, and 9.1.5.2, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_intra_eICIC}$ defined in Clause 8.1.2.8.1.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_eICIC}$ defined in clause 8.1.2.8.1.1 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_eICIC,\ Intra}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.1.2.8.1.2 E-UTRAN intra-frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable FDD intra frequency cell within $T_{identify_intra_elCIC}$ as shown in table 8.1.2.8.1.2-1.

Table 8.1.2.8.1.2-1: Requirement to identify a newly detectable FDD intra-frequency cell

DRX cy length		T _{identify_intra_elClC} (s) (DRX cycles)
≤0.04	4	1 (Note1)
0.04 <d< td=""><td>RX-</td><td>Note2 (52)</td></d<>	RX-	Note2 (52)
cycle≤0	.08	
0.128	3	4.22 (33)
0.128 <drx-< td=""><td>Note2 (28)</td></drx-<>		Note2 (28)
cycle≤2	.56	
Note1:	Number of DRX cycle	
	depends upon the DRX	
	cycle in use	
Note2:	Time depends upon the	
	DRX cycle in use	

A cell shall be considered detectable when

- RSRP related side conditions given in Sections 9.1.2.3 and 9.1.2.4 and RSRQ related side conditions given in Clause 9.1.5.2 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.8 for a corresponding Band.

In the RRC_CONNECTED state the measurement period for intra-frequency measurements is $T_{measure_intra_eICIC}$ as shown in table 8.1.2.8.1.2-2. The UE shall be capable of performing RSRP and RSRQ measurements for 8 identified intra-frequency cells, including also the cells which are not measured in the subframes indicated by the time-domain measurement resource restriction pattern, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_intra_eICIC}$.

Table 8.1.2.8.1.2-2: Requirement to measure FDD intra-frequency cells

DRX cycle length (s)		T _{measure_intra_elCIC} (s) (DRX cycles)
≤0.04	4	0.2 (Note1)
0.04 <d< td=""><td>RX-</td><td>Note2 (7)</td></d<>	RX-	Note2 (7)
cycle≤0).16	
0.16 <drx-< td=""><td>Note2 (5)</td></drx-<>		Note2 (5)
cycle≤2	2.56	
Note1: Numb		ber of DRX cycle
	depends upon the DRX	
	cycle in use	
Note2:	Time depends upon the	
	DRX cycle in use	

The RSRP and RSRQ measurement accuracy for the measured cells configured with a time-domain measurement resource restriction pattern for RRM intra-frequency measurements shall be as specified in the sub-clauses 9.1.2.3, 9.1.2.4, and 9.1.5.2, respectively.

8.1.2.8.1.2.1 Measurement Reporting Requirements

8.1.2.8.1.2.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.2.3, 9.1.2.4, and 9.1.5.2, respectively.

8.1.2.8.1.2.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.2.3, 9.1.2.4, and 9.1.5.2, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.8.1.2.1.3.

8.1.2.8.1.2.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.2.3, 9.1.2.4, and 9.1.5.2, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T $_{identify_intra_eICIC}$ defined in Clause 8.1.2.8.1.2. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_elCIC}$ defined in clause 8.1.2.8.1.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_intra_elCIC}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.1.2.8.2 E-UTRAN TDD intra-frequency measurements

8.1.2.8.2.1 E-UTRAN intra-frequency measurements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable TDD intra-frequency cell within

$$T_{\text{identify_intra_eICIC}} = T_{\text{basic_identify_E-UTRA_TDD_eICIC, intra}} \cdot \frac{T_{\text{Measurement_Period_eICIC, Intra}}}{T_{\text{Intra}}} \quad ms$$

where

T_{basic identify E-UTRA TDD eICIC, intra} is 1000 ms.

 T_{Intra} is the minimum time available for intra-frequency measurements, during the measurement period with an arbitrarily chosen timing. The time is assumed to be available for performing intra-frequency measurements whenever the receiver is guaranteed to be active on the intra-frequency carrier.

A cell shall be considered detectable when

- RSRP related side conditions given in Sections 9.1.2.3 and 9.1.2.4 and RSRQ related side conditions given in Clause 9.1.5.2 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.8 for a corresponding Band.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period_eICIC, Intra}$. If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra-frequency measurements is 200 ms. When no measurement gaps are activated, the UE shall be capable of performing RSRP and RSRQ measurements for 8 identified intra-frequency cells , including also the cells which are not measured in the subframes indicated by the time-domain measurement resource restriction pattern, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When measurement gaps are activated the UE shall be capable of performing measurements for at least $Y_{\text{measurement_intra_eICIC}}$ cells , where $Y_{\text{measurement_intra_eICIC}}$ is defined in the following equation. If the UE has identified more than $Y_{\text{measurement_intra_eICIC}}$ cells, the UE shall perform measurements of at least 8 identified intra-frequency cells but the reporting rate of RSRP and RSRQ measurements of cells from UE physical layer to higher layers may be decreased.

$$\mathbf{Y}_{\text{measurement_intra_eICIC}} = Floor \left\{ X_{\text{basic_measurement_TDD_eICIC}} \cdot \frac{\mathbf{T}_{\text{Intra}}}{\mathbf{T}_{\text{Measurement_Period_eICIC, Intra}}} \right\} \text{ cells}$$

where

 $X_{basic_measurement_TDD_eICIC} = 8$ (cells)

 $T_{Measurement_Period_eICIC,\ Intra} = 200\ ms$ is the measurement period for intra-frequency RSRP and RSRQ measurements.

The RSRP and RSRQ measurement accuracy for the measured cells configured with a time-domain measurement resource restriction pattern for RRM intra-frequency measurements shall be as specified in the sub-clauses 9.1.2.3, 9.1.2.4, and 9.1.5.2, respectively.

8.1.2.8.2.1.1 Measurement Reporting Requirements

8.1.2.8.2.1.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.2.3, 9.1.2.4, and 9.1.5.2, respectively.

8.1.2.8.2.1.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.2.3, 9.1.2.4, and 9.1.5.2, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.8.2.1.1.3.

8.1.2.8.2.1.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.2.3, 9.1.2.4, and 9.1.5.2, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T $_{identify_intra_eICIC}$ defined in Clause 8.1.2.8.2.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_eICIC}$ defined in clause 8.1.2.8.2.1 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_eICIC,\ Intra}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.1.2.8.2.2 E-UTRAN intra-frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable TDD intra frequency cell within $T_{identify_intra_elCIC}$ as shown in table 8.1.2.8.2.2-1.

Table 8.1.2.8.2.2-1: Requirement to identify a newly detectable TDD intra-frequency cell

DRX cycle length (s)		T _{identify_intra_elClC} (s) (DRX cycles)		
≤0.04		1 (Note1)		
0.04 <drx-< td=""><td>Note2 (52)</td></drx-<>		Note2 (52)		
cycle≤0.08				
0.128		4.22 (33)		
0.128 <drx-< td=""><td>Note2 (28)</td></drx-<>		Note2 (28)		
cycle≤2.56				
Note1:	Number of DRX cycle			
	depends upon the DRX			
		cycle in use		
Note2:	2: Time depends upon the			
	DRX	cycle in use		

A cell shall be considered detectable when

- RSRP related side conditions given in Sections 9.1.2.3 and 9.1.2.4 and RSRQ related side conditions given in Clause 9.1.5.2 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.8 for a corresponding Band.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{measure_intra_eICIC}$ as shown in table 8.1.2.8.2.2-2. The UE shall be capable of performing RSRP and RSRQ measurements for 8 identified intra-frequency cells, including also the cells which are not measured in the subframes indicated by the time-domain measurement resource restriction pattern, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_intra_eICIC}$.

Table 8.1.2.8.2.2-2: Requirement to measure TDD intra-frequency cells

DRX cycle length (s)	T _{measure_intra_elCIC} (s) (DRX cycles)		
≤0.04	0.2 (Note1)		
0.04 <drx-< td=""><td>Note2 (7)</td></drx-<>	Note2 (7)		
cycle≤0.16			
0.16 <drx-< td=""><td>Note2 (5)</td></drx-<>	Note2 (5)		
cycle≤2.56			
de	Number of DRX cycle depends upon the DRX cycle in use.		
	Time depends upon the DRX cycle in use.		

The RSRP and RSRQ measurement accuracy for the measured cells configured with a time-domain measurement resource restriction pattern for RRM intra-frequency measurements shall be as specified in the sub-clauses 9.1.2.3, 9.1.2.4, and 9.1.5.2, respectively.

8.1.2.8.2.2.1 Measurement Reporting Requirements

8.1.2.8.2.2.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.2.3, 9.1.2.4, and 9.1.5.2, respectively.

8.1.2.8.2.2.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.2.3, 9.1.2.4, and 9.1.5.2, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.8.2.2.1.3.

8.1.2.8.2.2.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.2.3, 9.1.2.4, and 9.1.5.2, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times \text{TTI}_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T $_{identify_intra_eICIC}$ defined in Clause 8.1.2.8.2.2. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_elCIC}$ defined in clause 8.1.2.8.2.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_intra_elCIC}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.1.2.8.3 E-UTRAN FDD intra-frequency measurements with CRS assistance information

The requirements in clause 8.1.2.8.3 shall apply for the UEs supporting the PSS/SSS and common channel interference handling, and CRS interference handling features. Moreover, the core requirements shall be satisfied provided that the following additional conditions are fulfilled:

- The UE is provided with the CRS assistance information via higher layers (TS 36.331 [2]),
- The CRS assistance information is valid during the entire measurement period.

The requirements in this section shall also be met when the number of transmit antenna ports [16] of one or more cells whose CRS assistance information is provided [2] is different from the number of transmit antenna ports of the measured cell.

8.1.2.8.3.1 E-UTRAN intra-frequency measurements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable FDD intra-frequency cell within:

$$T_{\text{identify_intra_FeICIC}} = T_{\text{basic_identify_E-UTRA_FDD_FeICIC, intra}} \cdot \frac{T_{\text{Measurement_Period_FeICIC, Intra}}}{T_{\text{Intra}}} \quad \textit{ms}$$

where

Tbasic_identify_E-UTRA_FDD_FeICIC, intra is 1000 ms.

 T_{Intra} is the minimum time available for intra-frequency measurements, during the measurement period with an arbitrarily chosen timing. The time is assumed to be available for performing intra-frequency measurements whenever the receiver is guaranteed to be active on the intra-frequency carrier.

A cell shall be considered detectable when:

- RSRP related side conditions given in Sections 9.1.2.5 and 9.1.2.6 and RSRQ related side conditions given in Section 9.1.5.3 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B, clause B.2.9 for a corresponding Band (Notes 1, 2).

Note 1: Part of the Iot includes the interference from at least:

- the PCell, or
- PCell and one intra-frequency neighbouring cell indicated in the CRS assistance information, or
- One or two intra-frequency neighbouring cells indicated in the CRS assistance information.

CRS assistance information has been provided for the intra-frequency neighbouring cells that generate interference. UE may use the CRS assistance information to mitigate the interference.

Note 2: An intra-frequency cell is known if it has been meeting the relevant cell identification requirement during the last 5 seconds.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period_FeICIC,\ Intra}$. If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra-frequency measurements is 200 ms. When no measurement gaps are activated, the UE shall be capable of performing RSRP and RSRQ measurements for 8 identified intra-frequency cells, including also the cells which are not measured in the subframes indicated by the time-domain measurement resource restriction pattern and the cells indicated in the CRS assistance information, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When measurement gaps are activated the UE shall be capable of performing measurements for at least

 $Y_{measurement_intra_FeICIC}$ cells , where $Y_{measurement_intra_FeICIC}$ is defined in the following equation. If the UE has identified more than $Y_{measurement_intra_FeICIC}$ cells, the UE shall perform measurements of at least 8 identified intrafrequency cells but the reporting rate of RSRP and RSRQ measurements of cells from UE physical layer to higher layers may be decreased.

$$\mathbf{Y}_{\text{measurement_intra_FeICIC}} = Floor \left\{ X_{\text{basic_measurement_FDD_FeICIC}} \cdot \frac{\mathbf{T}_{\text{Intra}}}{\mathbf{T}_{\text{Measurement_Period_FeICIC, Intra}} \right\} \text{ cells}$$

where

 $X_{basic_measurement_FDD_FeICIC} = 8$ (cells).

 $T_{Measurement_Period_FeICIC,\ Intra} = 200\ ms$ is the measurement period for intra-frequency RSRP and RSRQ measurements.

The RSRP and RSRQ measurement accuracy for the measured cells configured with a time-domain measurement resource restriction pattern for RRM intra-frequency measurements with CRS assistance information shall be as specified in the sub-clauses 9.1.2.5, 9.1.2.6, and 9.1.5.3, respectively.

8.1.2.8.3.1.1 Measurement Reporting Requirements

8.1.2.8.3.1.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.2.5, 9.1.2.6, and 9.1.5.3, respectively.

8.1.2.8.3.1.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.2.5, 9.1.2.6, and 9.1.5.3, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.8.3.1.1.3.

8.1.2.8.3.1.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.2.5, 9.1.2.6, and 9.1.5.3, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T_{identify_intra_FeICIC} defined in Clause 8.1.2.8.3.1. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_FeICIC}$ defined in clause 8.1.2.8.3.1 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_FeICIC}$, Intra provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.1.2.8.3.2 E-UTRAN intra-frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable FDD intra frequency cell within $T_{identify_intra_FeICIC}$ as shown in table 8.1.2.8.3.2-1.

Table 8.1.2.8.3.2-1: Requirement to identify a newly detectable FDD intra-frequency cell

DRX cycle length (s)	T _{identify_intra_FelCiC} (s) (DRX cycles)	
≤0.04	1 (Note 1)	
0.04 <drx-cycle≤0.08< td=""><td>Note 2 (52)</td></drx-cycle≤0.08<>	Note 2 (52)	
0.128	4.22 (33)	
0.128 <drx-cycle≤2.56< td=""><td>Note 2 (28]</td></drx-cycle≤2.56<>	Note 2 (28]	
NOTE 1: Number of DRX cycle depends upon the DRX cycle in use.		
NOTE 2: Time depends upon the DRX cycle in use.		

A cell shall be considered detectable when:

- RSRP related side conditions given in Sections 9.1.2.5 and 9.1.2.6 and RSRQ related side conditions given in Section 9.1.5.3 are fulfilled for a corresponding Band,
- SCH RP and SCH Ês/Iot according to Annex B, clause B.2.9 for a corresponding Band (Notes 1, 2).

Note 1: Part of the Iot includes the interference from at least:

- the PCell, or
- PCell and one intra-frequency neighbouring cell indicated in the CRS assistance information, or
- One or two intra-frequency neighbouring cells indicated in the CRS assistance information.

CRS assistance information has been provided for the intra-frequency neighbouring cells that generate interference. UE may use the CRS assistance information to mitigate the interference.

Note 2: An intra-frequency cell is known if it has been meeting the relevant cell identification requirement during the last 5 seconds.

In the RRC_CONNECTED state the measurement period for intra-frequency measurements is $T_{measure_intra_FeICIC}$ as shown in table 8.1.2.8.3.2-2. The UE shall be capable of performing RSRP and RSRQ measurements for 8 identified intra-frequency cells, including also the cells which are not measured in the subframes indicated by the time-domain measurement resource restriction pattern and the cell indicated in CRS assistance information, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_intra_FeICIC}$.

Table 8.1.2.8.3.2-2: Requirement to measure FDD intra-frequency cells

DRX cycle length (s)	T _{identify_intra_FelCIC} (s) (DRX cycles)	
≤0.04	0.2 (Note 1)	
0.04 <drx-cycle≤0.16< td=""><td>Note 2 (7)</td></drx-cycle≤0.16<>	Note 2 (7)	
0.16 <drx-cycle≤2.56< td=""><td>Note 2 (5)</td></drx-cycle≤2.56<>	Note 2 (5)	
NOTE 1: Number of DRX cycle depends upon the DRX cycle in use.		
NOTE 2: Time depends upon the DRX cycle in use.		

The RSRP and RSRQ measurement accuracy for the measured cells configured with a time-domain measurement resource restriction pattern for RRM intra-frequency measurements shall be as specified in the sub-clauses 9.1.2.5, 9.1.2.6, and 9.1.5.3, respectively.

8.1.2.8.3.2.1 Measurement Reporting Requirements

8.1.2.8.3.2.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.2.5, 9.1.2.6, and 9.1.5.3, respectively.

8.1.2.8.3.2.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.2.5, 9.1.2.6, and 9.1.5.3, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.8.3.2.1.3.

8.1.2.8.3.2.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.2.5, 9.1.2.6, and 9.1.5.3, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T_{identify_intra_FeICIC} defined in clause 8.1.2.8.3.2. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_FeICIC}$ defined in clause 8.1.2.8.3.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event

triggered measurement reporting delay shall be less than $T_{measure_intra_FeICIC}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.1.2.8.4 E-UTRAN TDD intra-frequency measurements with CRS assistance infromation

The requirements in clause 8.1.2.8.3 shall apply for the UEs upporting the PSS/SSS and common channel interference handling, and CRS interference handling features. Moreover, the core requirements shall be satisfied provided that the following additional conditions are fulfilled:

- The UE is provided with the CRS assistance information via higher layers (TS 36.331 [2]),
- The CRS assistance information is valid during the entire measurement period.

The requirements in this section shall also be met when the number of transmit antenna ports [16] of one or more cells whose CRS assistance information is provided [2] is different from the number of transmit antenna ports of the measured cell.

8.1.2.8.4.1 E-UTRAN intra-frequency measurements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable TDD intra-frequency cell within

$$T_{\text{identify_intra_FeICIC}} = T_{\text{basic_identify_E-UTRA_TDD_FeICIC, intra}} \cdot \frac{T_{\text{Measurement_Period_FeICIC, Intra}}}{T_{\text{Intra}}} \quad \textit{ms}$$

where

T_{basic_identify_E-UTRA_TDD_eICIC, intra} is 1000 ms.

 T_{Intra} is the minimum time available for intra-frequency measurements, during the measurement period with an arbitrarily chosen timing. The time is assumed to be available for performing intra-frequency measurements whenever the receiver is guaranteed to be active on the intra-frequency carrier.

A cell shall be considered detectable when:

- RSRP related side conditions given in Sections 9.1.2.5 and 9.1.2.6 and RSRQ related side conditions given in Section 9.1.5.3 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.9 for a corresponding Band (Notes 1, 2).

Note 1: Part of the Iot includes the interference from at least:

- the PCell, or
- PCell and one intra-frequency neighbouring cell indicated in the CRS assistance information, or
- One or two intra-frequency neighbouring cells indicated in the CRS assistance information

CRS assistance information has been provided for the intra-frequency neighbouring cells that generate interference. UE may use the CRS assistance information to mitigate the interference.

Note 2: An intra-frequency cell is known if it has been meeting the relevant cell identification requirement during the last 5 seconds.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period_FeICIC,\ Intra}$. If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra-frequency measurements is 200 ms. When no measurement gaps are activated, the UE shall be capable of performing RSRP and RSRQ measurements for 8 identified intra-frequency cells , including also the cells which are not measured in the subframes indicated by the time-domain measurement resource restriction pattern and the cells indicated in the CRS assistance information, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 200 ms. When

measurement gaps are activated the UE shall be capable of performing measurements for at least

 $Y_{measurement_intra_FeICIC}$ cells , where $Y_{measurement_intra_FeICIC}$ is defined in the following equation. If the UE has identified more than $Y_{measurement_intra_FeICIC}$ cells, the UE shall perform measurements of at least 8 identified intrafrequency cells but the reporting rate of RSRP and RSRQ measurements of cells from UE physical layer to higher layers may be decreased.

$$\mathbf{Y}_{\text{measurement_intra_FeICIC}} = Floor \left\{ X_{\text{basic_measurement_TDD_FeICIC}} \cdot \frac{\mathbf{T}_{\text{Intra}}}{\mathbf{T}_{\text{Measurement_Period_FeICIC, Intra}} \right\} \text{ cells}$$

where

 $X_{basic_measurement_TDD_FeICIC} = 8$ (cells)

 $T_{Measurement_Period_FeICIC,\ Intra} = 200 ms$ is the measurement period for intra-frequency RSRP and RSRQ measurements

The RSRP and RSRQ measurement accuracy for the measured cells configured with a time-domain measurement resource restriction pattern for RRM intra-frequency measurements with CRS assistance information shall be as specified in the sub-clauses 9.1.2.5, 9.1.2.6, and 9.1.5.3, respectively.

8.1.2.8.4.1.1 Measurement Reporting Requirements

8.1.2.8.4.1.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.2.5, 9.1.2.6, and 9.1.5.3, respectively.

8.1.2.8.4.1.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.2.5, 9.1.2.6, and 9.1.5.3, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.8.4.1.1.3.

8.1.2.8.4.1.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.2.5, 9.1.2.6, and 9.1.5.3, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_intra_FeICIC}$ defined in clause 8.1.2.8.4.1. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_FeICIC}$ defined in clause 8.1.2.8.4.1 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_FeICIC}$, Intra provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.1.2.8.4.2 E-UTRAN intra-frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable TDD intra frequency cell within $T_{identify_intra_FeICIC}$ as shown in table 8.1.2.8.4.2-1.

Table 8.1.2.8.4.2-1: Requirement to identify a newly detectable TDD intra-frequency cell

DRX cycle length (s)	T _{identify_intra_FelCIC} (s) (DRX cycles)
≤0.04	1 (Note 1)
0.04 <drx-cycle≤0.08< td=""><td>Note 2 (52)</td></drx-cycle≤0.08<>	Note 2 (52)
0.128	4.22 (33)
0.128 <drx-cycle≤2.56 (28)<="" 2="" note="" td=""></drx-cycle≤2.56>	
NOTE 1: Number of DRX cycle depends upon the DRX cycle in use.	
NOTE 2: Time depends upon the DRX cycle in use	

A cell shall be considered detectable when:

- RSRP related side conditions given in Sections 9.1.2.5 and 9.1.2.6 and RSRQ related side conditions given in Section 9.1.5.3 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.9 for a corresponding Band (Notes 1, 2).

Note 1: Part of the Iot includes the interference from at least:

- the PCell, or
- PCell and one intra-frequency neighbouring cell indicated in the CRS assistance information, or
- One or two intra-frequency neighbouring cells indicated in the CRS assistance information.

CRS assistance information has been provided for the intra-frequency neighbouring cells that generate interference. UE may use the CRS assistance information to mitigate the interference.

Note 2: An intra-frequency cell is known if it has been meeting the relevant cell identification requirement during the last 5 seconds.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{measure_intra_FeICIC}$ as shown in table 8.1.2.8.4.2-2. The UE shall be capable of performing RSRP and RSRQ measurements for 8 identified intra-frequency cells, including also the cells which are not measured in the subframes indicated by the time-domain measurement resource restriction pattern and the cell indicated in CRS assistance information, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_intra_FeICIC}$.

Table 8.1.2.8.4.2-2: Requirement to measure TDD intra-frequency cells

DRX cycle length (s)	T _{identify_intra_FelCIC} (s) (DRX cycles)
≤0.04	0.2 (Note 1)
0.04 <drx-cycle≤0.16< td=""><td>Note 2 (7)</td></drx-cycle≤0.16<>	Note 2 (7)
0.16 <drx-cycle≤2.56< td=""><td>Note 2 (5)</td></drx-cycle≤2.56<>	Note 2 (5)
NOTE 1: Number of DRX cycle depends upon the DRX cycle in use.	
NOTE 2: Time depends upon the DRX cycle in use.	

The RSRP and RSRQ measurement accuracy for the measured cells configured with a time-domain measurement resource restriction pattern for RRM intra-frequency measurements shall be as specified in the sub-clauses 9.1.2.5, 9.1.2.6, and 9.1.5.3, respectively.

8.1.2.8.4.2.1 Measurement Reporting Requirements

8.1.2.8.4.2.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.2.5, 9.1.2.6, and 9.1.5.3, respectively.

8.1.2.8.4.2.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.2.5, 9.1.2.6, and 9.1.5.3, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.8.2.2.1.3.

8.1.2.8.4.2.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.2.5, 9.1.2.6, and 9.1.5.3, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T identify_intra_FeICIC defined in clause 8.1.2.8.4.2. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_FeICIC}$ defined in clause 8.1.2.8.4.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_intra_FeICIC}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.1.2.9 E-UTRAN E-CID Measurements when Time Domain Measurement Resource Restriction Pattern is Configured

8.1.2.9.1 E-UTRAN FDD UE Rx-Tx Time Difference Measurements

The requirements in this clause apply for UE configured with a time-domain measurement resource restriction pattern for PCell measurements, provided that also the following additional conditions are fulfilled:

- The time domain measurement resource restriction pattern configured for the PCell (TS 36.331 [2]) indicates at least one subframe per radio frame for performing the PCell measurements, and
- Four symbols containing CRS are available in all subframes indicated by the time domain measurement resource restriction pattern.

When the UE is provided with a time-domain measurement resource restriction pattern for PCell measurements, the UE Rx-Tx time difference measurement shall meet the measurement requirements specified in Clause 8.1.2.7.1 and accuracy requirements specified in Clause 9.1.9.3, where the condition $\hat{E}s/Iot \ge -3dB$ in Table 9.1.9.3-1 corresponds to the CRS $\hat{E}s/Iot$ in subframes indicated by the time-domain measurement resource restriction pattern for PCell measurements (TS 36.331 [2]).

NOTE: It is up to the UE implementation whether the UE Rx-Tx time difference measurement is performed in any subframe or in subframes indicated by the time-domain measurement resource restriction pattern.

8.1.2.9.2 E-UTRAN TDD UE Rx-Tx Time Difference Measurements

The requirements in this clause apply for UE configured with a time-domain measurement resource restriction pattern for PCell measurements, provided that also the following additional conditions are fulfilled:

- The time domain measurement resource restriction pattern configured for the PCell (TS 36.331 [2]) indicates at least one subframe per radio frame for performing the PCell measurements, and
- Four symbols containing CRS are available in all subframes indicated by the time domain measurement resource restriction pattern.

When the UE is provided with a time-domain measurement resource restriction pattern for PCell measurements, the UE Rx-Tx time difference measurement shall meet the measurement requirements specified in Clause 8.1.2.7.2 and accuracy requirements specified in Clause 9.1.9.3, where the condition $\hat{E}s/Iot \ge -3dB$ in Table 9.1.9.3-1 corresponds to the CRS $\hat{E}s/Iot$ in subframes indicated by the time-domain measurement resource restriction pattern for PCell measurements (TS 36.331 [2]).

NOTE: It is up to the UE implementation whether the UE Rx-Tx time difference measurement is performed in any subframe or in subframes indicated by the time-domain measurement resource restriction pattern.

8.1.2.9.3 E-UTRAN FDD UE Rx-Tx Time Difference Measurements with CRS Assistance Information

For UE configured with a time-domain measurement resource restriction pattern for PCell measurements, the requirements in this section apply under the following conditions:

- The time domain measurement resource restriction pattern configured for the PCell (TS 36.331 [2]) indicates at least one subframe per radio frame for performing the PCell measurements, and
- Four symbols containing CRS are available in all subframes indicated by the time domain measurement resource restriction pattern, and
- The UE is provided with the CRS assistance information (TS 36.331 [2]) and the CRS assistance information is valid throughout the entire evaluation period.

When the UE is provided with a time-domain measurement resource restriction pattern for serving cell measurements, the UE Rx-Tx time difference measurement shall meet the measurement requirements specified in Section 8.1.2.7.1 and accuracy requirements specified in Section 9.1.9.4.

The requirements in this section shall also be met when the number of transmit antenna ports [16] of one or more cells whose CRS assistance information is provided [2] is different from the number of transmit antenna ports of the measured cell.

NOTE: It is up to the UE implementation whether the UE Rx-Tx time difference measurement is performed in any subframe or in subframes indicated by the time-domain measurement resource restriction pattern.

8.1.2.9.4 E-UTRAN TDD UE Rx-Tx Time Difference Measurements with CRS Assistance Information

For UE configured with a time-domain measurement resource restriction pattern for PCell measurements, the requirements in this section apply under the following conditions:

- The time domain measurement resource restriction pattern configured for the PCell (TS 36.331 [2]) indicates at least one subframe per radio frame for performing the PCell measurements, and
- Four symbols containing CRS are available in all subframes indicated by the time domain measurement resource restriction pattern, and
- The UE is provided with the CRS assistance information (TS 36.331 [2]) and the CRS assistance information is valid throughout the entire evaluation period.

When the UE is provided with a time-domain measurement resource restriction pattern for serving cell measurements, the UE Rx-Tx time difference measurement shall meet the measurement requirements specified in Section 8.1.2.7.2 and accuracy requirements specified in Section 9.1.9.4.

The requirements in this section shall also be met when the number of transmit antenna ports [16] of one or more cells whose CRS assistance information is provided [2] is different from the number of transmit antenna ports of the measured cell.

NOTE: It is up to the UE implementation whether the UE Rx-Tx time difference measurement is performed in any subframe or in subframes indicated by the time-domain measurement resource restriction pattern.

8.2 Capabilities for Support of Event Triggering and Reporting Criteria

8.2.1 Introduction

This clause contains requirements on UE capabilities for support of event triggering and reporting criteria. As long as the measurement configuration does not exceed the requirements stated in clause 8.2.2, the UE shall meet the performance requirements defined in clause 9.

The UE can be requested to make measurements under different measurement identities defined in TS 36.331 [2]. Each measurement identity corresponds to either event based reporting, periodic reporting, logged measurement reporting [2] or no reporting. In case of event based reporting, each measurement identity is associated with an event. In case of periodic reporting, a measurement identity is associated with one periodic reporting criterion. In case of logged measurement reporting, a measurement identity is associated with one logged measurement reporting criterion. In case of no reporting, a measurement identity is associated with one no reporting criterion.

The purpose of this clause is to set some limits on the number of different event, periodic, logged measurement and no reporting criteria the UE may be requested to track in parallel.

8.2.2 Requirements

In this clause a reporting criterion corresponds to either one event (in the case of event based reporting), or one periodic reporting criterion (in case of periodic reporting), or one logged measurement reporting criterion (in case of logged measurement reporting), or one no reporting criterion (in case of no reporting). For event based reporting, each instance of event, with the same or different event identities, is counted as separate reporting criterion in table 8.2.2-1.

The UE shall be able to support in parallel per category up to E_{cat} reporting criteria according to table 8.2.2-1. For the measurement categories belonging to measurements on: E-UTRA intra-frequency cells, E-UTRA inter-frequency cells, and inter-RAT per supported RAT(i.e. without counting other categories that the UE shall always support in parallel), the UE need not support more than the total number of reporting criteria as follows:

- 26 reporting criteria in total if the UE is not configured with any SCell or PSCell carrier frequency,
- 35 reporting criteria in total if the UE is configured with one SCell carrier frequency,
- 44 reporting criteria in total if the UE is configured with two SCell carrier frequencies,
- 53 reporting criteria in total if the UE is configured with three SCell carrier frequencies,
- 62 reporting criteria in total if the UE is configured with four SCell carrier frequencies,
- 35 reporting criteria in total if the UE is configured with one PSCell carrier frequency, and
- 44 reporting criteria in total if the UE is configured with one PSCell carrier frequency and one SCell carrier frequency.

A UE supporting increased number of carriers to monitor beyond 3 carriers shall be able to support up to 20 reporting criteria for inter-frequency measurement category according to table 8.2.2-1. Additionally such UE shall be able to support in parallel per category up to E_{cat} reporting criteria according to table 8.2.2-1. For the measurement categories belonging to measurements on: E-UTRA intra-frequency cells, E-UTRA inter-frequency cells, and inter-RAT per supported RAT, the UE need not support more than the total number of reporting criteria as follows:

Note 3:

number of carriers to monitor beyond 3.

- 39 reporting criteria in total if the UE is not configured with any SCell carrier frequency,
- 48 reporting criteria in total if the UE is configured with one SCell carrier frequency,
- 57 reporting criteria in total if the UE is configured with two SCell carrier frequencies,
- 48 reporting criteria in total if the UE is configured with one PSCell carrier frequency,
- 57 reporting criteria in total if the UE is configured with one PSCell carrier frequency and one SCell carrier frequencies,
- 66 reporting criteria in total if the UE is configured with three SCell carrier frequencies, and
- 75 reporting criteria in total if the UE is configured with four SCell carrier frequencies.

Table 8.2.2-1: Requirements for reporting criteria per measurement category

Measurement category	E _{cat}	Note
Intra-frequency Note 1	9	E-UTRA intra-frequency cells
Intra-frequency UE Rx-Tx time difference	2	Intra-frequency UE Rx-Tx time difference measurements reported to E-UTRAN via RRC and to positioning server via LPP. Applies for UE supporting both LPP and UE Rx-Tx time difference measurement.
Intra-frequency RSTD Note 2	1	Intra-frequency RSTD measurement reporting for UE supporting OTDOA; 1 report capable of minimum 16 cell measurements for the intra-frequency
Intra-frequency RSRP and RSRQ measurements for E-CID	1	Intra-frequency RSRP and RSRQ measurements for E-CID reported to E-SMLC via LPP [24]. One report capable of at least in total 9 intra-frequency RSRP and RSRQ measurements. Applicable to UE capable of reporting RSRP and RSRQ to E-SMLC via LPP.
Inter-frequency	7/20	E-UTRA inter-frequency cells (see note 3)
Inter-frequency RSTD Note 2	1	Inter-frequency RSTD measurement reporting for UE supporting OTDOA; 1 report capable of minimum 16 cell measurements for at least one inter-frequency. Only applicable as specified in Section 8.1.2.6.
Inter-RAT (GSM, cdma2000 1 x RTT and HRPD)	5	Only applicable for UE with this (inter-RAT) capability. This requirement (E _{cat} = 5) is per supported RAT.
Inter-RAT (UTRAN FDD, UTRAN TDD)	5 or 11	Only applicable for UE with this (inter-RAT) capability. This requirement (E _{cat} = 5 or 11) is per supported RAT. For UE which indicate support for Increased UE carrier monitoring UTRA E _{cat} = 11.
MBSFN measurements for MDT	1	MBSFN measurement reporting for UE supporting MBSFN measurements (MBSFN RSRP, MBSFN RSRQ, and MCH BLER) for MDT [2]; 1 report capable of minimum 1 MBSFN RSRP measurement [4], 1 MBSFN RSRQ measurement [4], and 1 MCH BLER measurement [4].
Note 1: When the UE is configured with SCell, PSC	Cell or PCell	carrier frequency, E _{cat} for Intra-frequency is
applied per serving frequency. Note 2: When the UE is configured with one SCell least 2 reporting criteria for all RSTD meas frequency, SCell carrier frequency and intecarrier frequencies, the UE shall be capable measurements configured to be performed.	carrier freque surements co er-frequency e of supporti on PCell ca	ency, the UE shall be capable of supporting at nfigured to be performed on PCell carrier carrier. When the UE is configured with two SCell

Support of Ecat of 20 for Measurement category Inter-frequency is applied for a UE supporting increased

8.3 Measurements for E-UTRA carrier aggregation

8.3.1 Introduction

Requirements in this clause are applicable to UE supporting E-UTRA FDD, E-UTRA TDD and/or E-UTRA TDD-FDD carrier aggregation.

Non configured frequencies may be measured with measurement gaps or autonomous gaps according to the requirements in clause 8.1.2.3 (E-UTRAN inter frequency measurements and E-UTRAN inter frequency measurements with autonomous gaps).

For UE, which does not support simultaneous reception and transmission for inter-band TDD CA specified in TS 36.331, and is compliant to the requirements for inter-band CA with uplink in one E-UTRA band and without simultaneous Rx/Tx specified in TS 36.101, the inter-band CA requirements in Section 8.3 shall apply also with different TDD UL/DL subframe configurations and/or different special subframe configurations used in CCs of different bands, under the following additional conditions:

- UE is not simultaneously scheduled in UL and DL on the different CCs, and
- at least DL subframe #0 or DL subframe #5 are available for measurements in the measured cell.

8.3.2 Measurements of the primary component carrier

Measurements of cells on the primary component carrier shall meet all applicable requirements (FDD or TDD) in clause 8.1.2.2 (E-UTRAN intra frequency measurements and E-UTRAN intra frequency measurements with autonomous gaps)

8.3.3 Measurements of a secondary component carrier

A Secondary component carrier may be activated and deactivated by MAC-CE commands as specified in [17]. The applicable performance requirements depend on whether the SCell on the corresponding frequency is actived or deactivated.

8.3.3.1 Measurements of a secondary component carrier with active SCell

When the SCell is activated, measurement performance requirements for the frequency are those given in clause 8.1.2.2(E-UTRAN intra frequency measurements and E-UTRAN intra frequency measurements with autonomous gaps). If common DRX is in use, then the requirements for that secondary component carrier are given by the applicable DRX requirements (FDD or TDD) in clause 8.1.2.2, otherwise the non DRX requirements are applicable. The applicable measurement accuracy requirements are in clause 9.1.11 (Carrier aggregation measurement accuracy)

8.3.3.2 Measurements of a secondary component carrier with deactivated SCell

This clause defines the measurement requirements of a secondary component carrier with deactivated SCell based on the parameter *measCycleSCell* defined in TS 36.331 [2].

8.3.3.2.1 E-UTRAN secondary component carrier measurements when no common DRX is used

When no DRX is in use the UE shall be able to identify a new detectable FDD or TDD cell on a secondary component carrier within $T_{identify\ scc}$, according to the parameter measCycleSCell where $T_{identify\ scc} = 20\ measCycleSCell$

A cell shall be considered detectable when

- RSRP related side condition given in Clause 9.1 are fulfilled for a corresponding Band,
- $SCH_RP|_{dBm}$ and $SCH_Brightarrow$ Es/Iot according to Annex B.2.7 for a corresponding Band

The measurement period for deactivated scell measurements is $T_{measure_scc}$ according to the parameter *measCycleSCell* where $T_{measure_scc} = 5$ *measCycleSCell*. The UE shall be capable of performing RSRP and RSRQ measurements for 8

identified cells on a secondary component carrier, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_scc}$.

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.11 (Carrier aggregation measurement accuracy)

A UE may reconfigure the receiver bandwidth or turn on/off one of the RF chains when performing measurements on up to four SCCs with deactivated SCell. This may cause interruptions on PCell or activated SCell(s) or both that are specified in Section 7.8.

8.3.3.2.1.1 Measurement Reporting Requirements

8.3.3.2.1.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in clause 9.

8.3.3.2.1.1.2 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in clause 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.3.2.1.1.3.

8.3.3.2.1.1.3 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in clause 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which is caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_scc}$ defined in Clause 8.3.3.2.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_scc}$ defined in clause 8.3.3.2.1 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_scc}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.3.3.2.2 E-UTRAN secondary component carrier measurements when common DRX is used

When DRX is in use the UE shall be able to identify a new detectable FDD or TDD cell on a secondary component carrier within $T_{identify_scc}$, according to the parameter measCycleSCell where $T_{identify_scc} = max(20 measCycleSCell$, $T_{identify_scc1}$). $T_{identify_scc1}$ is given in table 8.3.3.2.2-1.

DRX cycle length (s)	T _{identify_scc1} (s) (DRX cycles)
≤0.04	0.8 (Note1)
0.04 <drx-< td=""><td>Note2 (40)</td></drx-<>	Note2 (40)
cycle≤0.08	
0.128	3.2 (25)
0.128 <drx-< td=""><td>Note2(20)</td></drx-<>	Note2(20)
cycle≤2.56	
Note1: Numbe	r of DRX cycle depends
upon th	ne DRX cycle in use

Table 8.3.3.2.2-1: Requirement for T_{identify_scc1}

Note1: Number of DRX cycle depends upon the DRX cycle in use

Note2: Time depends upon the DRX cycle in use

A cell shall be considered detectable when

- RSRP related side condition given in Clause 9.1 are fulfilled for a corresponding Band,
- SCH_RP|_{dBm} and SCH Ês/Iot according to Annex B.2.7 for a corresponding Band

The measurement period for deactivated scell measurements is $T_{measure_scc}$ according to the parameter measCycleSCell where $T_{measure_scc} = max(5 measCycleSCell, T_{measure_scc})$. The UE shall be capable of performing RSRP and RSRQ measurements for 8 identified cells on a secondary component carrier, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_scc}$. $T_{measure_scc1}$ is given in table 8.3.3.2.2-2

Table 8.3.3.2.2-2: Requirement for T_{measure scc1}

DRX cycle length (s)	T _{measure_scc1} (s) (DRX cycles)	
≤0.04	0.2 (Note1)	
0.04 <drx-< th=""><th>Note2 (5)</th></drx-<>	Note2 (5)	
cycle≤2.56		
Note1: Number of DRX cycle		
depends upon the DRX cycle in use		
Note2: Time depends upon the DRX		
cycle in use		

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.11 (Carrier aggregation measurement accuracy).

A UE may reconfigure receiver bandwidth taking into account the SCell activation/deactivation status, and when making measurements of cells on up to four SCCs with deactivated SCell. This may cause interruptions (packet drops) to a PCell or activated SCell(s) or both when the PCell and the SCell belong to the same frequency band. No interruptions while the On Duration timer is running shall be allowed when common DRX is used. The requirement considers only interruptions due to reconfiguration of the receiver bandwidth, and not due to other causes such as RF impairments or channel conditions.

8.3.3.2.2.1 Measurement Reporting Requirements

8.3.3.2.2.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in clause 9.

8.3.3.2.2.1.2 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in clause 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.3.3.2.2.1.3.

8.3.3.2.2.1.3 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in clause 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which is caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_scc}$ defined in Clause 8.3.3.2.2. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_scc}$ defined in clause 8.3.3.2.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_scc}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.4 OTDOA RSTD Measurements for E-UTRAN carrier aggregation

8.4.1 Introduction

This clause contains RSTD measurement requirements on UE capabilities for support of E-UTRA carrier aggregation. Requirements in this clause are applicable to all carrier aggregation capable UE which have been configured with one or two downlink Scell(s). Non-configured frequencies may be measured with measurement gaps according to the requirements in clause 8.1.2.6, i.e., E-UTRAN inter-frequency RSTD measurement period applies. Requirements in this clause are applicable for E-UTRA FDD, E-UTRA TDD and E-UTRA TDD-FDD carrier aggregation.

For UE, which does not support simultaneous reception and transmission for inter-band TDD CA specified in TS 36.331 [2], and is compliant to the requirements for inter-band CA with uplink in one E-UTRA band and without simultaneous Rx/Tx specified in TS 36.101 [5], RSTD requirements in Section 8.4 shall apply also with different TDD UL/DL subframe configurations and/or different special subframe configurations used in CCs of different bands, under the following additional conditions:

all positioning subframes indicated in the OTDOA assistance data and specified in Section 9.1.10 are available for RSTD measurements in the measured and reference cells; and

- UE is not simultaneously scheduled in UL and DL on the different CCs.

8.4.2 Measurements on the primary component carrier

The RSTD measurements on cells belonging to the primary component carrier shall meet all applicable requirements (FDD or TDD) specified in clause 8.1.2.5, i.e., E-UTRAN intra-frequency RSTD measurement period applies.

The RSTD measurement accuracy for all the measurements on the primary component carrier shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.12.

If the PCell is changed, regardless whether the primary component carrier is changed or not while the RSTD measurements are being performed on cells belonging to the primary component carrier, then the UE shall complete the ongoing OTDOA measurement session. In case of change of the primary component carrier, the requirements shall apply only if the primary component carrier is swapped with any of the currently configured secondary component carrier(s). The UE shall also meet the OTDOA measurement and accuracy requirements for the primary component carrier. However in this case the total RSTD measurement period ($T_{RSTD, E-UTRAN, PCell_change}$) shall be according to the following expression:

$$T_{RSTD, E-UTRAN, PCell \ change} = T_{RSTD, E-UTRAN} + K \times T_{PRS} + T_{PCell \ change}$$
 ms,

where:

K is the number of times the PCell is changed during $T_{RSTD, E-UTRAN, PCell \ change}$,

 $T_{\rm PRS}$ is defined in clause 8.1.2.5,

 $T_{\text{PCell_change}}$ is the time during which the RSTD measurement may not be possible due to PCell change; it can be up to 25 ms.

 $T_{RSTD,\,E-UTRAN}$ corresponds to the E-UTRAN intra-frequency RSTD measurement period as specified in clause 8.1.2.5

Furthermore, due to the PCell changing the UE shall meet the RSTD measurement accuracy for a PRS bandwidth which is not larger than the minimum channel bandwidth of those PCell/SCell(s) on whose carriers RSTD measurement is performed during the RSTD measurement period.

8.4.3 Measurements on a secondary component carrier

The RSTD measurements when all cells are on a configured secondary component carrier shall meet all applicable requirements (FDD or TDD) specified in clause 8.1.2.5, i.e., E-UTRAN intra-frequency RSTD measurement period applies, regardless of whether the Scell on the corresponding frequency is activated or deactivated by the MAC-CE commands as specified in [17].

The RSTD measurement accuracy for all the measurements on the secondary component carrier shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.12.

A UE may reconfigure receiver bandwidth taking into account the SCell activation/deactivation status, and when making RSTD measurements on cells belonging to SCC with deactivated SCell. This may cause interruptions (packet drops) to a PCell when the PCell and the SCell belong to the adjacent or non-adjacent component carriers in the same frequency band or to different frequency bands. In this case, the UE shall follow the interruption requirements specified in Section 7.10.:

If the PCell is changed, regardless whether the primary component carrier is changed or not while the RSTD measurements are being performed on cells belonging to the secondary component carrier, then the UE shall complete the ongoing OTDOA measurement session. In case of change of the primary component carrier, the requirements shall apply only if the primary component carrier is swapped with any of the currently configured secondary component carrier(s). The UE shall also meet the OTDOA measurement and accuracy requirements for the secondary component carrier. However in this case the total RSTD measurement period ($T_{RSTD,\,E-UTRAN,\,PCell_change}$) shall be according to the following expression:

$$T_{\text{RSTD, E-UTRAN, PCell change}} = T_{\text{RSTD, E-UTRAN}} + K \times T_{\text{PRS}} + T_{\text{PCell change}}$$
 ms,

where:

K is the number of times the PCell is changed during $T_{RSTD, E-UTRAN, PCell \ change}$,

 $T_{\rm PRS}$ is defined in clause 8.1.2.5,

 $T_{
m PCell_change}$ is the time during which the RSTD measurement may not be possible due to PCell change; it can be up to 25 ms.

 $T_{RSTD,\,E-UTRAN}$ corresponds to the E-UTRAN intra-frequency RSTD measurement period as specified in clause 8.1.2.5.

Furthermore, due to the PCell changing the UE shall meet the RSTD measurement accuracy for a PRS bandwidth which is not larger than the minimum channel bandwidth of those PCell/SCell(s) on whose carriers RSTD measurement is performed during the RSTD measurement period.

8.4.4 Measurements on both primary component carrier and a secondary component carrier

The RSTD measurements of cells on both primary component carrier and a configured secondary component carrier shall meet all applicable requirements (FDD-FDD, TDD-TDD, TDD-FDD or FDD-TDD inter-Frequency OTDOA) specified in clause 8.1.2.6, i.e., E-UTRAN inter-frequency RSTD measurement period applies regardless of whether the SCell on the corresponding frequency is activated or deactivated by the MAC-CE commands as specified in [17], with the following exceptions

- the number of PRS positioning occasions is as specified in Table 8.4.4-1 shall apply, and
- TDD uplink-downlink subframes configurations as specified in Clause 8.1.2.5.2, Table 8.1.2.5.2-2 shall apply.

Table 8.4.4-1: Number of PRS positioning occasions within measurement period

Positioning subframe configuration period T_{PRS}	Number of PRS positioning occasions M
160 ms	32
>160 ms	16

The RSTD measurement accuracy for all the measurements on both primary component carrier and the secondary component carrier shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.12.

A UE may reconfigure its receiver bandwidth taking into account the SCell activation/deactivation status, and when performing RSTD measurements on cells belonging to at least SCC with deactivated SCell. This may cause interruptions (packet drops) on a PCell when the PCell and the SCell belong to the adjacent or non-adjacent component carriers in the same frequency band or to different frequency bands. In this case, the UE shall follow the interruption requirements specified in Section 7.10:

If the PCell is changed regardless whether the primary component carrier is changed or not while the RSTD measurements are being performed on cells belonging to both the primary component carrier and the secondary component carrier then the UE shall complete the ongoing OTDOA measurement session. In case of change of the primary component carrier, the requirements shall apply only if the primary component carrier is swapped with any of the currently configured secondary component carrier(s). The UE shall also meet the OTDOA measurement and accuracy requirements for the primary and secondary component carrier. However in this case the total RSTD measurement period ($T_{\text{RSTD, E-UTRAN, PCell change}}$) shall be according to the following expression:

$$T_{\text{RSTD, E-UTRAN, PCell change}} = T_{\text{RSTD, E-UTRAN}} + K \times T_{\text{PRS}} + T_{\text{PCell change}}$$
 ms,

where:

K is the number of times the PCell is changed during $T_{\text{RSTD, E-UTRAN, PCell_change}}$,

 $T_{\rm PRS}$ is defined in clause 8.1.2.6,

 $T_{\text{PCell_change}}$ is the time during which the RSTD measurement may not be possible due to PCell change; it can be up to 25 ms,

 $T_{RSTD,\,E-UTRAN}$ corresponds to the E-UTRAN inter-frequency RSTD measurement period as specified in clause 8.1.2.6 with the exception that the number of PRS positioning occasions is as specified in Table 8.4.4-1.

Furthermore, due to the PCell changing the UE shall meet the RSTD measurement accuracy for a PRS bandwidth which is not larger than the minimum channel bandwidth of those PCell/SCell(s) on whose carriers RSTD measurement is performed during the RSTD measurement period.

8.4.5 Measurements on different secondary component carriers

The RSTD measurements of cells on a configured secondary component carrier and another configured secondary component carrier shall meet all applicable requirements (FDD-FDD, TDD-TDD, TDD-FDD or FDD-TDD inter-Frequency OTDOA) specified in clause 8.1.2.6, i.e., E-UTRAN inter-frequency RSTD measurement period applies regardless of whether the SCell on the corresponding frequency is activated or deactivated by the MAC-CE commands as specified in [17], with the following exceptions

- the number of PRS positioning occasions is as specified in Table 8.4.4-1 shall apply, and
- TDD uplink-downlink subframes configurations as specified in Clause 8.1.2.5.2, Table 8.1.2.5.2-2 shall apply.

Table 8.4.4-1: Number of PRS positioning occasions within measurement period

Positioning subframe configuration period T_{PRS}	Number of PRS positioning occasions M
160 ms	32
>160 ms	16

The RSTD measurement accuracy for all the measurements on the secondary component carriers shall be fulfilled according to the accuracy as specified in the sub-clause 9.1.12.

A UE may reconfigure its receiver bandwidth taking into account the SCell activation/deactivation status, and when performing RSTD measurements on cells belonging to at least SCC with deactivated SCell. This may cause interruptions (packet drops) on a PCell when the PCell and the SCell belong to the adjacent or non-adjacent component carriers in the same frequency band or to different frequency bands. In this case, the UE shall follow the interruption requirements specified in Section 7.10:

If the PCell is changed regardless whether the primary component carrier is changed or not while the RSTD measurements are being performed on cells belonging to the secondary component carriers then the UE shall complete the ongoing OTDOA measurement session. In case of change of the primary component carrier, the requirements shall apply only if the primary component carrier is swapped with any of the currently configured secondary component carrier(s). The UE shall also meet the OTDOA measurement and accuracy requirements for the secondary component carriers. However in this case the total RSTD measurement period ($T_{RSTD, E-UTRAN, PCell_change}$) shall be according to the following expression:

$$\mathbf{T}_{\text{RSTD, E-UTRAN, PCell_change}} = \mathbf{T}_{\text{RSTD, E-UTRAN}} + K \times T_{\text{PRS}} + T_{\text{PCell_change}} \qquad \textit{ms} \; ,$$

where:

K is the number of times the PCell is changed during $T_{\text{RSTD, E-UTRAN, PCell_change}}$,

 $T_{\rm PRS}$ is defined in clause 8.1.2.6,

 $T_{\text{PCell_change}}$ is the time during which the RSTD measurement may not be possible due to PCell change; it can be up to 25 ms,

 $T_{RSTD,\,E-UTRAN}$ corresponds to the E-UTRAN inter-frequency RSTD measurement period as specified in clause 8.1.2.6 with the exception that the number of PRS positioning occasions is as specified in Table 8.4.4-1.

Furthermore, due to the PCell changing the UE shall meet the RSTD measurement accuracy for a PRS bandwidth which is not larger than the minimum channel bandwidth of those PCell/SCell(s) on whose carriers RSTD measurement is performed during the RSTD measurement period.

8.5 Measurements for UE category 0

8.5.1 Introduction

The UE category 0 applicability of the requirements in subclause 8.5 is defined in Section 3.1.

This clause contains requirements on the UE regarding measurement reporting in RRC_CONNECTED state. The requirements are specified for E-UTRA intra frequency measurements. These measurements may be used by the E-UTRAN, e.g. for handover decisions. The measurement quantities are defined in [4], the measurement model is defined in [22] and measurement accuracies are specified in clause 9. Control of measurement reporting is specified in TS 36.331 [2].

When the UE is provided with IDC solution, the UE shall also perform RRM measurements and meet the corresponding requirements in clause 8.

8.5.2 Requirements

8.5.2.1 E-UTRAN intra frequency measurements

The UE shall be able to identify new intra-frequency cells and perform RSRP measurements of identified intra-frequency cells without an explicit intra-frequency neighbour cell list containing physical layer cell identities. During the RRC_CONNECTED state the UE shall continuously measure identified intra frequency cells and additionally search for and identify new intra frequency cells.

8.5.2.1.1 E-UTRAN FDD intra frequency measurements

8.5.2.1.1.1 E-UTRAN intra frequency measurements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable FDD intra frequency cell within

$$T_{\text{identify intra_UE cat 0}} = T_{\text{basic_identify_E-UTRA_FDD_UE cat 0}} \cdot \frac{T_{\text{Measurement_Period_UE cat 0, Intra}}}{T_{\text{Intra}}} \quad \textit{ms}$$

where

T_{basic identify E-UTRA FDD UE cat 0, intra} is 1000 ms

A cell shall be considered detectable when

- RSRP related side conditions given in Sections 9.1.13.1 and 9.1.13.2 and RSRQ related side conditions given in Clause 9.1.13.3 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.1 for a corresponding Band.

 T_{Intra} : This is the minimum time that is available for intra frequency measurements, during the measurement period with an arbitrarily chosen timing. Time is assumed to be available for performing intra frequency measurements whenever the receiver is guaranteed to be active on the intra frequency carrier.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period_UE\ cat\ 0\ Intra}$. If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is 400 ms. When no measurement gaps are activated, the low complexity UE shall be capable of performing RSRPand RSRQ measurements for 8 identified-intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 400 ms. When measurement gaps are activated the UE shall be capable of performing measurements for at least $Y_{\text{measurement intra}_UE \text{ cat 0}}$ cells , where $Y_{\text{measurement intra}_UE \text{ cat 0}}$ is defined in the following equation. If the UE has identified more than $Y_{\text{measurement intra}_UE \text{ cat 0}}$ cells, the UE shall perform measurements of at least 8 identified intra- frequency cells but the reporting rate of RSRP and RSRQ measurements of cells from UE physical layer to higher layers may be decreased.

$$\mathbf{Y}_{\text{measurement_intra_UE cat 0}} = Floor \left\{ X_{\text{basic_measurement_FDD_UE cat 0}} \cdot \frac{\mathbf{T}_{\text{Intra}}}{\mathbf{T}_{\text{Measurement_Period_UE cat 0, Intra}} \right\}$$

cells where

 $X_{basic measurement FDD UE cat 0} = 8 (cells)$

 $T_{Measurement_Period_UE\ cat\ 0,\ Intra} = 400~ms.$ The measurement period for Intra frequency RSRP and RSRQ measurements.

The RSRP measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.13.1 and 9.1.13.2, and the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.13.3.

8.5.2.1.1.1.1 Measurement Reporting Requirements

8.5.2.1.1.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.13.1, 9.1.13.2 and 9.1.13.3, respectively.

8.5.2.1.1.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.13.1, 9.1.13.2 and 9.1.13.3, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.5.2.1.1.1.1.3.

8.5.2.1.1.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.13.1, 9.1.13.2 and 9.1.13.3, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T $_{identify\ intra_UE\ cat\ 0}$ defined in Clause 8.5.2.1.1.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_UE\ cat\ 0}$ defined in clause 8.5.2.1.1.1 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_UE\ cat\ 0}$, Intra provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.5.2.1.1.2 E-UTRAN intra frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable FDD intra frequency cell within $T_{identify_intra_UE\ cat\ 0}$ as shown in table 8.5.2.1.1.2-1

Table 8.5.2.1.1.2-1: Requirement to identify a newly detectable FDD intrafrequency cell

DRX cycle length (s)	T _{identify_intra_UE cat 0} (s) (DRX cycles)	
≤0.04	[1] (Note1)	
0.04 <drx-< td=""><td>Note2 (40)</td></drx-<>	Note2 (40)	
cycle≤0.08		
0.128	3.2 (25)	
0.128 <drx- note2(20)<="" td=""></drx->		
cycle≤2.56		
Note1: Number of DRX cycle		
depends upon the DRX cycle in use		
Note2: Time de	Note2: Time depends upon the DRX	

cycle in use

A cell shall be considered detectable when

- RSRP related side conditions given in Sections 9.1.13.1 and 9.1.13.2 and RSRQ related side conditions given in Clause 9.1.13.3 are fulfilled for a corresponding Band,
- SCH_RP and SCH Es/Iot according to Annex B.2.1 for a corresponding Band

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{measure_intra_UE\ cat\ 0}$ as shown in table 8.5.2.1.1.2-2. The UE shall be capable of performing RSRP and RSRQ measurements for 8 identified-intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_intra\ UE\ cat\ 0}$.

Table 8.5.2.1.1.2-2: Requirement to measure FDD intrafrequency cells

DRX cycle length (s)	T _{measure_intra_UE cat 0} (s) (DRX cycles)	
≤0.08	0.4 (Note1)	
0.08 <drx-< td=""><td>Note2 (5)</td></drx-<>	Note2 (5)	
cycle≤2.56		
Note1: Number of DRX cycle		
depends upon the DRX cycle in use		
Note2: Time depends upon the DRX		
cycle in use		

The RSRP measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.13.1 and 9.1.13.2, and the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.13.3.

8.5.2.1.1.2.1 Measurement Reporting Requirements

8.5.2.1.1.2.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.13.1, 9.1.13.2 and 9.1.13.3, respectively.

8.5.2.1.1.2.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.13.1, 9.1.13.2 and 9.1.13.3, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.5.2.1.1.2.1.3.

8.5.2.1.1.2.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.13.1, 9.1.13.2 and 9.1.13.3, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T $_{identify_intra,\ UE\ cat\ 0}$ defined in Clause 8.5.2.1.1.2 When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_UE\ cat\ 0}$ defined in clause 8.5.2.1.1.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_intra_UE\ cat\ 0}$ provided the timing to that cell has not changed more than $\pm\ 50$ Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.5.2.1.2 E-UTRAN intra frequency measurements for HD-FDD

8.5.2.1.2.1 E-UTRAN intra frequency measurements when no DRX is used

The requirements in this section are applicable for the UE which supports half duplex operation on one or more supported frequency bands [2].

The requirements defined in clause 8.5.2.1.1.1 also apply for this section provided the following conditions are met:

- at least downlink subframe # 0 or downlink subframe # 5 per radio frame of an intra-frequency cell to be identified by the UE is available at the UE over T_{identify intra UE cat 0};
- at least one downlink subframe per radio frame of measured cell is available at the UE for RSRP and RSRQ measurements assuming measured cell is identified cell over $T_{measure_intra_UE\ cat\ 0}$.

8.5.2.1.2.2 E-UTRAN intra frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable FDD intra frequency cell within $T_{identify_intra_UE\ cat\ 0}$ as shown in table 8.5.2.1.2.2-1

Table 8.5.2.1.2.2-1: Requirement to identify a newly detectable HD-FDD intrafrequency cell

DRX cycle length (s)	T _{identify_intra_UE cat 0} (s) (DRX cycles)
≤0.04	1 (Note1)
0.04 <drx-< td=""><td>Note2 (50)</td></drx-<>	Note2 (50)
cycle≤0.08	
0.128	3.2 (32)
0.128 <drx-< td=""><td>Note2(25)</td></drx-<>	Note2(25)
cycle≤2.56	
Note1: Number of DRX cycle	

depends upon the DRX cycle in use
Note2: Time depends upon the DRX
cycle in use

A cell shall be considered detectable when

- RSRP related side conditions given in Sections 9.1.13.1 and 9.1.13.2 and RSRQ related side conditions given in Clause 9.1.13.3 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.1 for a corresponding Band

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{measure_intra_UE\ cat\ 0}$ as shown in table 8.5.2.1.2.2-2. The UE shall be capable of performing RSRP and RSRQ measurements for 8 identified-intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_intra\ UE\ cat\ 0}$.

Table 8.5.2.1.2.2-2: Requirement to measure HD-FDD intrafrequency cells

DRX cycle length (s)	T _{measure_intra_UE cat 0} (s) (DRX cycles)	
≤0.04	0.4 (Note1)	
0.04 <drx-< td=""><td>Note2 (7)</td></drx-<>	Note2 (7)	
cycle≤0.16		
0.16 <drx-< td=""><td>Note2(5)</td></drx-<>	Note2(5)	
cycle≤2.56		
Note1: Number of DRX cycle		
depends upon the DRX cycle in use		
Note2: Time depends upon the DRX		
cycle in use		

The RSRP measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.13.1 and 9.1.13.2, and the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.13.3.

8.5.2.1.1.2.1 Measurement Reporting Requirements

8.5.2.1.1.2.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.13.1, 9.1.13.2 and 9.1.13.3, respectively.

8.5.2.1.1.2.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.13.1, 9.1.13.2 and 9.1.13.3, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.5.2.1.1.2.1.3.

8.5.2.1.1.2.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.13.1, 9.1.13.2 and 9.1.13.3, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T $_{identify_intra_UE\ cat\ 0}$ defined in Clause 8.5.2.1.1.2 When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_UE\ cat\ 0}$ defined in clause 8.5.2.1.1.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_intra_UE\ cat\ 0}$ provided the timing to that cell has not changed more than $\pm\ 50$ Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.5.2.1.3 E-UTRAN TDD intra frequency measurements

8.5.2.1.3.1 E-UTRAN intra frequency measurements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable TDD intra frequency cell within

$$T_{\text{identify intra_UE cat 0}} = T_{\text{basic identify } E-UTRA_TDD_UE cat 0, intra} \cdot \frac{T_{\text{Measurement Period_UE cat 0, Intra}}}{T_{\text{Intra}}} \quad \textit{ms}$$

where

T_{basic identify E-UTRA TDD UE cat 0, intra} is 1000 ms

A cell shall be considered detectable when

- RSRP related side conditions given in Sections 9.1.13.1 and 9.1.13.2 and RSRQ related side conditions given in Clause 9.1.13.3 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.1 for a corresponding Band

 T_{Intra} : This is the minimum time that is available for intra frequency measurements, during the measurement period with an arbitrarily chosen timing. Time is assumed to be available for performing intra frequency measurements whenever the receiver is guaranteed to be active on the intra frequency carrier.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period_UE\ cat\ 0\ Intra}$. If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is 400 ms. When no measurement gaps are activated, the UE shall be capable of performing RSRP and RSRQ measurements for 8 identified-intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of 400 ms. When measurement gaps are activated the UE shall be capable of performing measurements for at least $Y_{\text{measurement intra_UE cat 0}}$ cells , where $Y_{\text{measurement intra_UE cat 0}}$ is defined in the following equation. If the UE has identified more than $Y_{\text{measurement intra_UE cat 0}}$ cells, the UE shall perform measurements of at least 8 identified intra-frequency cells but the reporting rate of RSRP and RSRQ measurements of cells from UE physical layer to higher layers may be decreased.

$$\mathbf{Y}_{\text{measurement intra_UE cat 0}} = Floor \left\{ X_{\text{basic measurement TDD_UE cat 0}} \cdot \frac{\mathbf{T}_{\text{Intra}}}{\mathbf{T}_{\text{Measurement_Period_UE cat 0, Intra}} \right\}$$

cells where

 $X_{\text{basic measurement TDD UE cat 0}} = 8 \text{ (cells)}$

 $T_{Measurement_Period\;intra_UE\;cat\;0}$ = 400 ms. The measurement period for Intra frequency RSRP and RSRQ measurements.

The RSRP measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.13.1 and 9.1.13.2, and the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.13.3.

8.5.2.1.3.1.1 Measurement Reporting Requirements

8.5.2.1.3.1.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.13.1, 9.1.13.2 and 9.1.13.3, respectively.

8.5.2.1.3.1.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.13.1, 9.1.13.2 and 9.1.13.3, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.5.2.1.3.1.1.3.

8.5.2.1.3.1.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.13.1, 9.1.13.2 and 9.1.13.3, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T $_{identify\;intra_UE\;cat\;0}$ defined in Clause 8.5.2.1.3.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_UE\ cat\ 0}$ defined in clause 8.5.2.1.3.1 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period\ Intra_UE\ cat\ 0}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.5.2.1.3.2 E-UTRAN intra frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable TDD intra frequency cell within $T_{identify_intra_UE\ cat\ 0}$ as shown in table 8.5.2.1.3.2-1

Table 8.5.2.1.3.2-1: Requirement to identify a newly detectable TDD intrafrequency cell

DRX cycle length (s)	T _{identify_intra_UE cat 0} (s) (DRX cycles)
≤0.04	1 (Note1)
0.04 <drx-< td=""><td>Note2 (40)</td></drx-<>	Note2 (40)
cycle≤0.08	
0.128	3.2 (25)
0.128 <drx-< td=""><td>Note2(20)</td></drx-<>	Note2(20)
cycle≤2.56	, ,
Notal: Number of DDV avala	

Note1: Number of DRX cycle depends upon the DRX cycle in use Note2: Time depends upon the DRX cycle in use

A cell shall be considered detectable when

- RSRP related side conditions given in Clause 9.1.13.1 and 9.1.13.2 and RSRQ related side conditions given in Clause 9.1.13.3 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.1 for a corresponding Band

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{measure_intra_UE\ cat\ 0}$ as shown in table 8.5.2.1.3.2-2. The UE shall be capable of performing RSRP and RSRQ measurements for 8 identified intra-frequency cells and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_intra_UE\ cat\ 0}$.

Table 8.5.2.1.3.2-2: Requirement to measure TDD intra frequency cells

DRX cycle length (s)	T _{measure_intra_UE cat 0} (s) (DRX cycles)	
≤0.08	0.4 (Note1)	
0.08 <drx-< td=""><td>Note2 (5)</td></drx-<>	Note2 (5)	
cycle≤2.56		
Note1: Number of DRX cycle		
depends upon the		
DRX cycle in use.		
Note2: Time depends upon the DRX cycle in use.		

The RSRP measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.13.1 and 9.1.13.2, and the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.13.3.

8.5.2.1.3.2.1 Measurement Reporting Requirements

8.5.2.1.3.2.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.13.1, 9.1.13.2 and 9.1.13.3, respectively.

8.5.2.1.3.2.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.13.1, 9.1.13.2 and 9.1.13.3, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.5.2.1.3.2.1.3.

8.5.2.1.3.2.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.13.1, 9.1.13.2 and 9.1.13.3, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than T $_{identify_intra_UE\ cat\ 0}$ defined in Clause 8.5.2.1.3.2. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_UE\ cat\ 0}$ defined in clause 8.5.2.1.3.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_intra_UE\ cat\ 0}$ provided the timing to that cell has not changed more than $\pm\ 50$ Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.5.2.1.4 E-UTRAN FDD intra frequency measurements with autonomous gaps for UE category 0

The requirements defined in this subclause 8.5.2.1.4 apply provided the following condition is met:

- Tx diversity or transmission using multiple antennas are supported in the target cell to be detected.

8.5.2.1.4.1 Identification of a new CGI of E-UTRA cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose 'reportCGI'. The UE may make autonomous gaps in downlink reception and uplink transmission for receiving MIB and SIB1 message according to clause 5.5.3.1 of TS 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or not, or whether SCell(s) are configured or not, the UE shall be able to identify a new CGI of E-UTRA cell within:

$$T_{\text{identify CGI LC-UE, intra}} = T_{\text{basic identify CGI LC-UE, intra}}$$
 ms

Where

 $T_{basic_identify_CGI_LC-UE,\ intra} = 190$ ms. This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of an E-UTRA cell is defined, provided that the E-UTRA cell has been already identified by the UE.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in Clause 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.2 for a corresponding Band

The MIB of an E-UTRA cell whose CGI is identified shall be considered decodable by the UE provided the PBCH demodulation requirements are met according to [TBD].

The requirement for identifying a new CGI of an E-UTRA cell within $T_{basic_identify_CGI_LC-UE,intra}$ is applicable when no DRX is used as well as when all the DRX cycles specified in TS 36.331 [2] are used.

Within the time, $T_{identify_CGI_LC-UE, intra}$ ms, over which the UE identifies the new CGI of E-UTRA cell, the UE shall transmit at least 92 ACK/NACKs on PCell provided that:

- there is continuous DL data allocation,
- no DRX cycle is used,
- no measurement gaps are configured,
- only one code word is transmitted in each subframe,
- no MBSFN subframes are configured in the PCell or each of activated SCell(s).

8.5.2.1.4.2 ECGI Reporting Delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle. If IDC autonomous denial is configured, an additional delay can be expected.

8.5.2.1.5 E-UTRAN intra frequency measurements with autonomous gaps for HD-FDD UE category 0

The requirements in this section are applicable for the UE which supports half duplex FDD operation on one or more supported frequency bands [2].

The requirements defined in this subclause 8.5.2.1.5 apply provided the following condition is met:

- Tx diversity or transmission using multiple antennas are supported in the target cell to be detected.

8.5.2.1.5.1 Identification of a new CGI of E-UTRA cell with autonomous gaps

All the CGI requirements with the exception of requirement on the number of ACK/NACK transmission on PCell defined in clause 8.5.2.1.4.1 also apply for this section.

For the UE supporting half duplex FDD operation there is no requirement in terms of number of ACK/NACK transmission on PCell.

8.5.2.1.5.2 ECGI Reporting Delay

The ECGI reporting delay defined in clause 8.5.2.1.4.2 also apply for this section.

8.5.2.1.6 E-UTRAN TDD intra frequency measurements with autonomous gaps for UE category 0

The requirements defined in this subclause 8.5.2.1.6 apply provided the following condition is met:

- Tx diversity or transmission using multiple antennas are supported in the target cell to be detected.

8.5.2.1.6.1 Identification of a new CGI of E-UTRA cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose 'reportCGI'. The UE may make autonomous gaps in downlink reception and uplink transmission for receiving MIB and SIB1 messages according to clause 5.5.3.1 of TS 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or not, or whether SCell(s) are configured or not, the UE shall be able to identify a new CGI of E-UTRA cell within:

$$T_{\text{identify_CGI_LC-UE, intra}} = T_{\text{basic_identify_CGI_LC-UE, intra}}$$
 ms

Where

 $T_{basic_identify_CGI_LC-UE,\ intra} = 190$ ms. This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of an E-UTRA cell is defined, provided that the E-UTRA cell has been already identified by the UE.

A cell shall be considered identifiable when the following conditions are fulfilled:

- RSRP related side conditions given in Clause 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.2 for a corresponding Band

The MIB of an E-UTRA cell whose CGI is identified shall be considered decodable by the UE provided the PBCH demodulation requirements are met according to [TBD].

The requirement for identifying a new CGI of an E-UTRA cell within $T_{basic_identify_CGI_LC-UE, intra}$ is applicable when no DRX is used as well as when all the DRX cycles specified in TS 36.331 [2] are used.

Within the time, $T_{identify_CGI_LC-UE, intra}$ ms, over which the UE identifies the new CGI of E-UTRA cell, the UE shall be able to transmit at least the number of ACK/NACKs stated in Table 8.5.2.1.6.1-1 on PCell provided that:

- there is continuous DL data allocation,
- no DRX cycle is used,
- no measurement gaps are configured,
- only one code word is transmitted in each subframe,
- no MBSFN subframes are configured in the PCell or each of activated SCell(s).

Table 8.5.2.1.6.1-1: Requirement on minimum number of ACK/NACKs to transmit during T_{basic_identify_CGI_LC-UE, intra}.

UL/DL configuration	Minimum number of transmitted ACK/NACKs
0	30
1	54
2	68
3	56
4	61
5	66
6	46

8.5.2.1.6.2 ECGI Reporting Delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle. If IDC autonomous denial is configured, an additional delay can be expected.

8.6 Discovery signal measurements

8.6.1 Introduction

This clause contains requirements on the UE for measurement reporting in RRC_CONNECTED state when discovery signal [16] is configured. The requirements are specified for E-UTRA CRS based discovery signal measurements and CSI-RS based discovery signal measurements. These measurements may be used by the E-UTRAN, e.g. for handover decisions. The measurement quantities are defined in [4], the measurement model is defined in [22] and measurement accuracy requirements are specified in clause 9. Control of measurement reporting is specified in TS 36.331 [2].

The requirements in Section 9 are applicable for a UE performing measurements according to Section 8.6.

8.6.2 Requirements for CRS based discovery signal measurements

8.6.2.1 E-UTRAN intra frequency measurements

The UE shall be able to identify new intra-frequency cells and perform measurements of identified intra-frequency cells without an explicit intra-frequency neighbour cell list containing physical layer cell identities. During the RRC_CONNECTED state the UE shall continuously measure identified intra frequency cells and additionally search for and identify new intra frequency cells.

8.6.2.1.1 E-UTRAN FDD intra frequency measurements

8.6.2.1.1.1 E-UTRAN FDD intra frequency measurements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable FDD intra frequency cell within $T_{identify_intra_SCE}$,

 $T_{identify\ intra\ SCE} = 12*T_{DMTC\ periodicity} + T_{Measurement\ Period\ intra\ FDD\ CRS}$

A cell shall be considered detectable when

- RSRP related side conditions given in Sections 9.1.14.2 and RSRQ related side conditions given in Clause 9.1.14.4 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.10 for a corresponding Band

 $T_{DMTC_periodicity} \ is \ the \ discovery \ signal \ measurement \ timing \ configuration \ periodicity \ of \ higher \ layer.$

 $T_{Measurement_Period_intra_FDD_CRS} \ is \ the \ intra-frequency \ period \ for \ measurements \ as \ shown \ in \ table \ 8.6.2.1.1.1-1$

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period\ intra_FDD_CRS}$ when no DRX is used. If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{Measurement_Period}$ _intra_FDD_CRS as shown in table 8.6.2.1.1.1-1, when no DRX is in use. The UE shall be capable of performing RSRP and RSRQ measurements for 3 identified intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{Measurement_Period_intra_FDD_CRS}$

Table 8.6.2.1.1.1-1: Requirement to measure FDD intra frequency cell

Measurement bandwidth [RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{Measurement_Period intra_FDD_CRS} [ms]
≥6	≥1	5 * T _{DMTC_periodicity}
≥25	≥1	3 * T _{DMTC_periodicity}

The RSRP measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.14.2, and the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.14.4.

8.6.2.1.1.1.1 Measurement Reporting Requirements

8.6.2.1.1.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.14.2 and 9.1.14.4 respectively.

8.6.2.1.1.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.14.2 and 9.1.14.4 respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.6.2.1.1.1.1.3.

8.6.2.1.1.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.14.2 and 9.1.14.4 respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_intra_SCE}$ defined in Clause 8.6.2.1.1.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_SCE}$ defined in clause 8.6.2.1.1.1 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_intra_FDD_CRS}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.6.2.1.1.2 E-UTRAN FDD intra frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable FDD intra frequency cell within $T_{identify_intra_SCE_DRX}$.

 $T_{identify_intra_SCE_DRX\ =\ 16*Max\ \{\ T_{DMTC_periodicity},\ DRX\ cycle\ length\} +\ T_{Measurement_Period\ _intra_FDD_CRS_DRX}$

A cell shall be considered detectable when

- RSRP related side conditions given in Sections 9.1.14.2 and RSRQ related side conditions given in Clause 9.1.14.4 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.10 for a corresponding Band

T_{DMTC} periodicity is the discovery signal measurement timing configuration periodicity of higher layer.

 $T_{Measurement_Period_intra_FDD_CRS_DRX}$ is the intra-frequency period for measurements as shown in table 8.6.2.1.1.2-1

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period\ intra_FDD_\ CRS_DRX}$ when DRX is used. If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{Measurement_Period}$ _intra_FDD_CRS_DRX as shown in table 8.6.2.1.1.2-1, when DRX is in use. The UE shall be capable of performing RSRP and RSRQ measurements for 3 identified intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{Measurement_Period_intra_FDD_CRS_DRX}$.

Table 8.6.2.1.1.2-1: Requirement to measure FDD intra frequency cell

Measurement bandwidth [RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{Measurement_Period intra_FDD_CRS_DRX} [ms]
≥6	≥1	5 * Max{ T _{DMTC_periodicity} , DRX cycle length }
≥25	≥1	3 * Max{ T _{DMTC_periodicity} , DRX cycle length }

The RSRP measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.14.2, and the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.14.4.

8.6.2.1.1.2.1 Measurement Reporting Requirements

8.6.2.1.1.2.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.14.2 and 9.1.14.4 respectively.

8.6.2.1.1.2.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.14.2 and 9.1.14.4 respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.6.2.1.1.2.1.3.

8.6.2.1.1.2.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.14.2 and 9.1.14.4 respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_intra_SCE_DRX}$ defined in Clause 8.6.2.1.1.2. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_SCE_DRX}$ defined in clause 8.6.2.1.1.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_intra_FDD_CRS_DRX}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.6.2.1.2 E-UTRAN TDD intra frequency measurements

8.6.2.1.2.1 E-UTRAN TDD intra frequency measurements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable TDD intra frequency cell within $T_{identify_intra_SCE}$,

 $T_{identify_intra_SCE} = 12*T_{DMTC_periodicity} + T_{Measurement_Period_intra_TDD_CRS}$

A cell shall be considered detectable when

- RSRP related side conditions given in Sections 9.1.14.2 and RSRQ related side conditions given in Clause 9.1.14.4 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.10 for a corresponding Band

T_{DMTC} periodicity is the discovery signal measurement timing configuration periodicity of higher layer.

 $T_{Measurement_Period_intra_TDD_CRS}$ is the intra-frequency period for measurements

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period_intra_TDD_CRS}$ when no DRX is used. If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{\text{Measurement_Period}}$ _intra_TDD_CRS as shown in table 8.6.2.1.2.1-1, when no DRX is in use. The UE shall be capable of performing RSRP and RSRQ measurements for 3 identified intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{\text{Measurement_Period_intra_TDD_CRS}$

Table 8.6.2.1.2.1-1: Requirement to measure TDD intra frequency cell

Measurement bandwidth[RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{Measurement_Period intra_TDD_CRS} [ms]
≥6	≥2	5 * T _{DMTC_periodicity}
≥ 25	≥2	3 * T _{DMTC_periodicity}

The RSRP measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.14.2, and RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.14.4.

8.6.2.1.2.1.1 Measurement Reporting Requirements

8.6.2.1.2.1.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.14.2 and 9.1.14.4 respectively.

8.6.2.1.2.1.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.14.2 and 9.1.14.4 respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.6.2.1.2.1.1.3.

8.6.2.1.2.1.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.14.2 and 9.1.14.4 respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_intra_SCE}$ defined in Clause 8.6.2.1.2.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_SCE}$ defined in clause 8.6.2.1.2.1 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_intra_TDD_CRS}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.6.2.1.2.2 E-UTRAN TDD intra frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable TDD intra frequency cell within $T_{identify_intra_SCE_DRX}$.

 $T_{identify\ intra\ SCE\ DRX\ =} 16* max \{ T_{DMTC\ periodicity}, DRX\ cycle\ length \} + T_{Measurement\ Period\ intra\ TDD\ CRS\ DRX} \}$

A cell shall be considered detectable when

- RSRP related side conditions given in Sections 9.1.14.2 and RSRQ related side conditions given in Clause 9.1.14.4 are fulfilled for a corresponding Band,
- SCH RP and SCH Ês/Iot according to Annex B.2.10 for a corresponding Band

 $T_{DMTC_periodicity}$ is the discovery signal measurement timing configuration periodicity of higher layer.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period\ intra_TDD_\ CRS_DRX}$ when DRX is used. If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{Measurement_Period}$ _intra_TDD_CRS_DRX as shown in table 8.6.2.1.2.2-1, when DRX is in use. The UE shall be capable of performing RSRP and RSRQ measurements for 3 identified intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{Measurement_Period_intra_TDD_CRS_DRX}$

Table 8.6.2.1.2.2-1: Requirement to measure TDD intra frequency cell

Measurement bandwidth[RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{Measurement_Period} intra_TDD_CRS_DRX [ms]
≥6	≥2	5 * Max{ T _{DMTC_periodicity} , DRX cycle length
≥ 25	≥2	3 * Max{ T _{DMTC_periodicity} , DRX cycle length

The RSRP measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.14.2, and the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.14.4.

8.6.2.1.2.2.1 Measurement Reporting Requirements

8.6.2.1.2.2.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.14.2 and 9.1.14.4 respectively.

8.6.2.1.2.2.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.14.2 and 9.1.14.4 respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8,6.2.1.2.2.1.3.

8.6.2.1.2.2.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.14.2 and 9.1.14.4 respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_intra_SCE_DRX}$ defined in Clause 8.6.2.1.2.2. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_SCE_DRX}$ defined in clause 8.6.2.1.2.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_intra_TDD_CRS_DRX}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.6.2.2 E-UTRAN inter frequency measurements

The UE shall be able to identify new inter-frequency cells and perform RSRP and RSRQ measurements of identified inter-frequency cells if carrier frequency information is provided by the PCell, even if no explicit neighbour list with physical layer cell identities is provided. The discovery signal occasion and the measurement gap should be aligned, provided that also the following additional conditions are fulfilled:

Entire discovery signal occasion should be contained in the measurement gap.

The subframe contained discovery signal for the measurement is not overlapped with the first 0.5ms period and the last 0.5ms period in every gap.

8.6.2.2.1 E-UTRAN FDD – FDD inter-frequency measurements

8.6.2.2.1.1 E-UTRAN FDD – FDD inter frequency measurements when no DRX is used

When measurement gaps are scheduled, or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new FDD inter-frequency within $T_{Identify_Inter_SCE}$ according to the following expression:

MGRP}*Nfreq

 $T_{Identify_Inter_SCE} = \underline{13} * Max \{T_{DMTC_periodicity}, MGRP\} * N_{freq} + T_{Measurement_Period_inter_FDD_CRS}$

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP related side conditions given in Clause 9.1.14.2 and RSRQ related side conditions given in Sections 9.1.14.4 are fulfilled.
- SCH_RP|_{dBm} SCH Ês/Iot according to Annex B.2.11 for a corresponding Band,

 $T_{DMTC_periodicity}$ is the discovery signal measurement timing configuration periodicity of higher layer.

 $T_{\text{Measurement_Period_intra_FDD_CRS}}$ is the inter-frequency period for measurements as shown in table 8.6.2.2.1.2-1. N_{freq} is defined in clause 8.1.2.1.1.

When measurement gaps are scheduled for FDD inter frequency measurements, or the UE supports capability of conducting such measurements without gaps, the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with measurement accuracy as specified in sub-clauses 9.1.14.2 and 9.1.14.4, respectively, with measurement period given by table 8.6.2.3.1.1-1.

The UE shall be capable of performing RSRP and RSRQ measurements of at least 3 identified inter-frequency cells per FDD inter-frequency for up to 3 FDD inter-frequencies and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period defined in table 8.6.2.2.1.1-1 when no DRX is in use, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps.

Table 8.6.2.2.1.1-1: Requirement to measure FDD inter frequency cell

The RSRP measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.14.2, and the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.14.4.

8.6.2.2.1.1.1 Measurement Reporting Requirements

8.6.2.2.1.1.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.14.2 and 9.1.14.4, respectively.

8.6.2.2.1.1.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.14.2, and 9.1.14.4, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.6.2.2.1.1.1.3.

8.6.2.2.1.1.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.14.2 and 9.1.14.4, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay

excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{Identify_Inter_SCE}$ defined in Clause 8.6.2.2.1.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{Identify_Inter_SCE}$ defined in clause 8.6.2.2.1.1 and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_inter_FDD_CRS}$ provided the timing to that cell has not changed more than \pm 50 Ts while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.6.2.2.1.2 E-UTRAN FDD – FDD inter frequency measurements when DRX is used

When DRX is in use, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new detectable E-UTRAN FDD inter frequency cell within $T_{identify_inter_SCE_DRX}$.

 $T_{identify_inter_SCE_DRX} = 17*Max \; \{ \; T_{DMTC_periodicity}, \; DRX \; cycle \; length, \; MGRP \} \; *N_{freq} + T_{Measurement_Period_inter_FDD_CRS_DRX} \; description \; T_{identify_inter_SCE_DRX} = 17*Max \; \{ \; T_{DMTC_periodicity}, \; DRX \; cycle \; length, \; MGRP \} \; *N_{freq} + T_{Measurement_Period_inter_FDD_CRS_DRX} \; description \; T_{identify_inter_SCE_DRX} = 17*Max \; \{ \; T_{DMTC_periodicity}, \; DRX \; cycle \; length, \; MGRP \} \; *N_{freq} + T_{Measurement_Period_inter_FDD_CRS_DRX} \; description \; T_{identify_inter_SCE_DRX} = 17*Max \; \{ \; T_{DMTC_periodicity}, \; DRX \; cycle \; length, \; MGRP \} \; *N_{freq} + T_{Measurement_Period_inter_FDD_CRS_DRX} \; description \; T_{identify_inter_SCE_DRX} = 17*Max \; \{ \; T_{DMTC_periodicity}, \; DRX \; cycle \; length, \; MGRP \} \; *N_{freq} + T_{Measurement_Period_inter_FDD_CRS_DRX} \; description \; T_{identify_inter_SCE_DRX} = 17*Max \; T_{identify_inter_SCE_DRX}$

A cell shall be considered detectable when

- RSRP related side conditions given in Sections 9.1.14.2 and RSRQ related side conditions given in Clause 9.1.14.4 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.11 for a corresponding Band

T_{DMTC periodicity} is the discovery signal measurement timing configuration periodicity of higher layer.

 $T_{Measurement_Period_inter_FDD_CRS_DRX}$ is the inter-frequency period for measurements as shown in Table 8.6.2.2.1.2-1. N_{freq} is defined in clause 8.1.2.1.1.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period_inter_FDD_CRS_DRX}$ when DRX is used. If higher layer filtering is used, an additional cell identification delay can be expected.

The UE shall be capable of performing RSRP and RSRQ measurements of at least 3 identified inter-frequency cells per FDD inter-frequency for up to 3 FDD inter-frequencies and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period defined in table 8.6.2.2.1.2-1 when DRX is in use, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps.

Table 8.6.2.2.1.2-1: Requirement to measure FDD interfrequency cell

Measurement bandwidth[RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{Measurement_} Period inter_FDD_CRS_DRX [ms]
≥6	≥1	5 * <i>Max</i> { T _{DMTC_periodicity} , DRX cycle length,MGRP}* <i>N</i> _{freq}
≥25	≥1	3 * <i>Max</i> { T _{DMTC_periodicity} , DRX cycle length,MGRP}* <i>N</i> _{freq}

The RSRP measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.14.2, and the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.14.4.

8.6.2.2.1.2.1 Measurement Reporting Requirements

8.6.2.2.1.2.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.14.2, and 9.1.14.4 respectively.

8.6.2.2.1.2.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.14.2 and 9.1.14.4 respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.6.2.2.1.2.1.3.

8.6.2.2.1.2.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.14.2, and 9.1.14.4 respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times \text{TTI}_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_inter_SCE\ DRX}$ defined in Clause 8.6.2.2.1.2. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_inter_SCE\ DRX}$ defined in clause 8.6.2.2.1.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_inter_FDD_CRS_DRX}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.6.2.2.2 E-UTRAN TDD – TDD inter frequency measurements

8.6.2.2.2.1 E-UTRAN TDD – TDD inter frequency measurements when no DRX is used

When measurement gaps are scheduled, or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new TDD inter-frequency within $T_{Identify_Inter_SCE}$ according to the following expression:

 $T_{identify_inter_SCE} = 13 * Max \{ T_{DMTC_periodicity}, DRX \ cycle \ length, MGRP \} * N_{freq} + T_{Measurement_Period_inter_TDD_CRS}$

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP related side conditions given in Clause 9.1.14.2 and RSRQ related side conditions given in Sections 9.1.14.4 are fulfilled,
- SCH_RP|_{dBm} and SCH Ês/Iot according to Annex B.2.11 for a corresponding Band

T_{DMTC} periodicity is the discovery signal measurement timing configuration periodicity of higher layer.

 $T_{\text{Measurement_Period_inter_TDD_CRS}}$ is the inter-frequency period for measurements as shown in Table 8.6.2.2.2.1-1. N_{freq} is defined in clause 8.1.2.1.1.

When measurement gaps are scheduled for TDD inter frequency measurements, or the UE supports capability of conducting such measurements without gaps, the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with measurement accuracy as specified in sub-clauses 9.1.14.2, and 9.1.14.4, respectively, with measurement period $T_{\text{Measurement_Period inter_TDD_CRS}$ given by table 8.6.2.2.2.1-1:

Table 8.6.2.2.2.1-1: Requirement to measure TDD interfrequency cell

Measurement bandwidth[RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{Measurement_Period inter_TDD_CRS} [ms]
≥6	≥2	5 * <i>Max</i> { T _{DMTC_periodicity} , MGRP}* <i>N</i> _{freq}
≥25	≥2	3 * <i>Max</i> { T _{DMTC_periodicity} , MGRP}* <i>N_{freq}</i>

The UE shall be capable of performing RSRP and RSRQ measurements of at least 3 identified inter-frequency cells per FDD inter-frequency for up to 3TDD inter-frequencies and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period defined in table 8.6.2.2.1.2-1 when DRX is in use, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps.

8.6.2.2.1.1 Measurement Reporting Requirements

8.6.2.2.2.1.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.14.2, and 9.1.14.4, respectively.

8.6.2.2.2.1.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.14.2, and 9.1.14.4, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.6.2.2.2.1.1.3.

8.6.2.2.1.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.14.2, and 9.1.14.4, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{Identify_Inter}$ defined in clause 8.6.2.2.2.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{Identify_Inter_SCE}$ defined in clause 8.6.2.2.2.1 and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{Measurement_Period\ inter_TDD_CRS}$ defined in clause 8.6.2.2.2.1 provided the timing to that cell has not changed more than \pm 50 Ts while measurementgap has not been available and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.6.2.2.2.2 E-UTRAN TDD – TDD inter frequency measurements when DRX is used

When DRX is in use, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new detectable E-UTRAN TDD inter frequency cell within $T_{identify_inter_SCE_DRX}$

 $T_{identify_inter_SCE_DRX} = 17 * \textit{Max} \; \{ \; T_{DMTC_periodicity}, \; DRX \; cycle \; length, \; MGRP \} \; *N_{freq} \; + T_{Measurement_Period_inter_TDD_CRS_DRX} \; | \; T_{identify_inter_SCE_DRX} \; |$

A cell shall be considered detectable when

- RSRP related side conditions given in Clause 9.1.14.2 and RSRQ related side conditions given in Sections 9.1.14.4 are fulfilled,
- SCH_RP|_{dBm} and SCH Ês/Iot according to Annex B.2.11 for a corresponding Band

T_{DMTC} periodicity is the discovery signal measurement timing configuration periodicity of higher layer.

 $T_{Measurement_Period_inter_TDD_CRS_DRX}$ is the inter-frequency period for measurements as shown in Table 8.6.2.2.2-1. N_{freq} is defined in clause 8.1.2.1.1.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period\ intra_TDD_CRS_DRX}$ when DRX is used. If higher layer filtering is used, an additional cell identification delay can be expected.

The UE shall be capable of performing RSRP and RSRQ measurements of at least 3 identified inter-frequency cells per TDD inter-frequency for up to 3 TDD inter-frequencies and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period defined in table 8.6.2.2.1.2-1 when DRX is in use, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps.

Table 8.6.2.2.2.1: Requirement to measure TDD interfrequency cell

Measurement bandwidth[RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{Measurement_} Period inter_TDD_CRS_DRX [ms]
≥6	≥2	5 * <i>Max</i> { T _{DMTC_periodicity} , DRX cycle length,MGRP}* <i>N</i> _{freq}
≥25	≥2	3 * <i>Max</i> { T _{DMTC_periodicity} , DRX cycle length,MGRP}* <i>N</i> _{freq}

The RSRP measurement accuracy for all measured cells shall be as specified in the sub-clauses 9.1.14.2, and the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.14.4.

8.6.2.2.2.1 Measurement Reporting Requirements

8.6.2.2.2.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.14.2, and 9.1.14.4, respectively.

8.6.2.2.2.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.14.2, and 9.1.14.4, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.1.2.3.2.1.1.3.

8.6.2.2.2.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.14.2, and 9.1.14.4, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times \text{TTI}_{\text{DCCH}}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{Identify_Inter}$ defined in clause 8.1.2.3.2.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_inter_SCE_DRX}$ defined in clause 8.6.2.2.2.2 and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_inter_TDD_CRS_DRX}$ defined in clause 8.6.2.2.2.2 provided the timing to that cell has not changed more than \pm 50 Ts while measurementgap has not been available and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.6.2.2.3 E-UTRAN TDD – FDD inter frequency measurements

8.6.2.2.3.1 E-UTRAN TDD – FDD inter frequency measurements when no DRX is used

The requirements in this clause shall apply to UE supporting FDD and TDD.

The requirements in clause 8.6.2.2.1.1 also apply for this section.

8.6.2.2.3.2 E-UTRAN TDD – FDD inter frequency measurements when DRX is used

The requirements in this clause shall apply to UE supporting FDD and TDD.

The requirements in clause 8.6.2.2.1.2 also apply for this section.

8.6.2.2.4 E-UTRAN FDD – TDD inter frequency measurements

8.6.2.2.4.1 E-UTRAN FDD – TDD inter frequency measurements when no DRX is used

The requirements in this clause shall apply to UE supporting FDD and TDD.

The requirements in clause 8.6.2.2.2.1 also apply for this section.

8.6.2.2.4.2 E-UTRAN FDD – TDD inter frequency measurements when DRX is used

The requirements in this clause shall apply to UE supporting FDD and TDD.

The requirements in clause 8.6.2.2.2.2 also apply for this section.

8.6.3 Requirements for CSI-RS based discovery signal measurements

8.6.3.1 E-UTRAN intra frequency measurements

The UE shall be able to identify new intra-frequency TPs and perform CSI-RSRP measurements of intra-frequency TPs with an explicit intra-frequency TP list containing physical layer cell identities. During the RRC_CONNECTED state the UE shall continuously measure identified intra frequency TPs and additionally search for and identify new intra frequency TPs.

8.6.3.1.1 E-UTRAN FDD intra frequency measurements

8.6.3.1.1.1 E-UTRAN FDD intra frequency measurements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable FDD intra frequency TP within $T_{identify_intra_TP_SCE}$,

 $T_{identify_intra_TP_SCE} = T_{identify_intra_SCE} + T_{Measurement_Period_intra_FDD_CSI-RS}$

A TP shall be considered detectable when

- CSI-RSRP related side conditions given in Sections 9.1.14.3 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.10 for a corresponding Band

 $T_{identify_intra_SCE}$ is the intra-frequency period for cell identification in section 8.6.2.1.1.1. $T_{Measurement_Period_intra_FDD_CSI-RS}$ is the intra-frequency period for TP measurement as shown in table 8.6.3.1.1.1-1.

Identification of a TP shall include identification of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period_intra_FDD_CSI-RS}$ when no DRX is used. If higher layer filtering is used, an additional TP identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{Measurement_Period_intra_FDD_CSI_RS}$ as shown in table 8.6.3.1.1.1-1, when no DRX is in use. The UE shall be capable of performing CSI-RSRP measurements for 3 identified intra-frequency TPs, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{Measurement_Period_intra_FDD_CSI_RS}$

Table 8.6.3.1.1.1-1: Requirement to measure FDD intra frequency TP

Measurement bandwidth [RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{Measurement_Period_intra_FDD_CSI-RS} [ms]
≥ 6	≥1	5* T _{DMTC_periodicity}
≥ 25	≥1	3* T _{DMTC_periodicity}

T_{DMTC periodicity} is the discovery signal measurement timing configuration periodicity of higher layer.

The CSI-RSRP measurement accuracy for all measured TPs shall be as specified in the sub-clauses 9.1.14.3.

8.6.3.1.1.1.1 Measurement Reporting Requirements

8.6.3.1.1.1.1 Periodic Reporting

Reported CSI-RSRP measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.14.3.

8.6.3.1.1.1.2 Event-triggered Periodic Reporting

Reported CSI-RSRP measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.14.3.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.6.3.1.1.1.1.3.

8.6.3.1.1.1.3 Event Triggered Reporting

Reported CSI-RSRP measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.14.3.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_intra_TP_SCE}$ defined in Clause 8.6.3.1.1.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a TP which has been detectable at least for the time period $T_{identify_intra_TP_SCE}$ defined in clause 8.6.3.1.1.1 becomes undetectable for a period ≤ 5 seconds and then the TP becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_intra_FDD_CSI_RS}$ provided the timing to that TP has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.6.3.1.1.2 E-UTRAN FDD intra frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable FDD intra frequency TP within $T_{identify\ intra\ TP\ SCE\ DRX}$.

 $T_{identify_intra_TP_SCE_DRX} = T_{identify_intra_SCE_DRX} + T_{Measurement_Period_intra_FDD_CSI-RS_DRX}$

A TP shall be considered detectable when

- CSI-RSRP related side conditions given in Sections 9.1.14.3 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.10 for a corresponding Band

 $T_{identify_intra_SCE_DRX}$ is the intra-frequency period for cell identification in section 8.6.2.1.1.2. $T_{Measurement_Period_intra_FDD_CSI-RS_DRX}$ is the intra-frequency period for TP measurement as shown in table 8.6.3.1.1.2-1.

Identification of a TP shall include identification of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period_intra_FDD_CSI-RS_DRX}$ when DRX is used. If higher layer filtering is used, an additional TP identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{\text{Measurement_Period}}$ intra_FDD_CSI-RS_DRX as shown in table 8.6.3.1.1.2-1, when DRX is in use. The UE shall be capable of performing CSI-RSRP measurements for 3 identified intra-frequency TPs, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{\text{Measurement_Period_intra_FDD_CSI-RS_DRX}$.

Table 8.6.3.1.1.2-1: Requirement to measure FDD intra frequency TP

Measurement bandwidth [RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{Measurement_} Period intra_FDD_ CSI-RS_DRX [ms]
≥ 6	≥1	5*Max{T _{DMTC_periodicity} , DRX cycle length}
≥ 25	≥1	3*Max{T _{DMTC_periodicity} , DRX cycle length}

T_{DMTC periodicity} is the discovery signal measurement timing configuration periodicity of higher layer.

The CSI-RSRP measurement accuracy for all measured TPs shall be as specified in the sub-clauses 9.1.14.3.

8.6.3.1.1.2.1 Measurement Reporting Requirements

8.6.3.1.1.2.1.1 Periodic Reporting

Reported CSI-RSRP measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.14.3.

8.6.3.1.1.2.1.2 Event-triggered Periodic Reporting

Reported CSI-RSRP measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.14.3.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.6.3.1.1.2.1.3.

8.6.3.1.1.2.1.3 Event Triggered Reporting

Reported CSI-RSRP measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.14.3.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay

uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_intra_TP_SCE_DRX}$ defined in Clause 8.6.3.1.1.2. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a TP which has been detectable at least for the time period $T_{identify_intra_TP_SCE_DRX}$ defined in clause 8.6.3.1.1.2 becomes undetectable for a period \leq 5 seconds and then the TP becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_intra_FDD_CSI_RS_DRX}$ provided the timing to that TP has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.6.3.1.2 E-UTRAN TDD intra frequency measurements

8.6.3.1.2.1 E-UTRAN TDD intra frequency measurements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable TDD intra frequency TP within $T_{identify_intra_TP_SCE}$,

 $T_{identify_intra_TP_SCE} = T_{identify_intra_SCE} + T_{Measurement_Period_intra_TDD_CSI-RS}$

A TP shall be considered detectable when

- CSI-RSRP related side conditions given in Sections 9.1.14.3 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.10 for a corresponding Band

 $T_{identify_intra_SCE}$ is the intra-frequency period for cell identification in section 8.6.2.1.2.1. $T_{Measurement_Period_intra_TDD_CSI-RS}$ is the intra-frequency period for TP measurement as shown in table 8.6.3.1.2.1-1.

Identification of a TP shall include identification of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period_intra_TDD_CSI-RS}$ when no DRX is used. If higher layer filtering is used, an additional TP identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{\text{Measurement_Period}}$ intra_TDD_CSI-RS as shown in table 8.6.3.1.2.1-1, when no DRX is in use. The UE shall be capable of performing measurements for 3 identified intra-frequency TPs, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{\text{Measurement_Period_intra_TDD_CSI-RS}$

Table 8.6.3.1.2.1-1: Requirement to measure TDD intra frequency TP

Measurement bandwidth [RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{Measurement_} Period _intra_TDD_CSI-RS [ms]
≥ 6	≥2	5* T _{DMTC_periodicity}
≥ 25	≥2	3* T _{DMTC} periodicity

T_{DMTC} periodicity is the discovery signal measurement timing configuration periodicity of higher layer.

The CSI-RSRP measurement accuracy for all measured TPs shall be as specified in the sub-clauses 9.1.14.3.

8.6.3.1.2.1.1 Measurement Reporting Requirements

8.6.3.1.2.1.1.1 Periodic Reporting

Reported CSI-RSRP measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.14.3.

8.6.3.1.2.1.1.2 Event-triggered Periodic Reporting

Reported CSI-RSRP measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.14.3.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8,6,3,1,2,1,1,3.

8.6.3.1.2.1.1.3 Event Triggered Reporting

Reported CSI-RSRP measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.14.3.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_intra_TP_SCE}$ defined in Clause 8.6.3.1.2.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a TP which has been detectable at least for the time period $T_{identify_intra_TP_SCE}$ defined in clause 8.6.3.1.2.1 becomes undetectable for a period ≤ 5 seconds and then the TP becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_intra_TDD_CSI-RS}$ provided the timing to that TP has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.6.3.1.2.2 E-UTRAN TDD intra frequency measurements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable TDD intra frequency TP within $T_{identify_intra_TP_SCE_DRX}$.

 $T_{identify_intra_TP_SCE_DRX} = T_{identify_intra_SCE_DRX} + T_{Measurement_Period_intra_TDD_CSI-RS_DRX}$

A TP shall be considered detectable when

- CSI-RSRP related side conditions given in Sections 9.1.14.3 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.10 for a corresponding Band

 $T_{identify_intra_SCE_DRX} \ is \ the \ intra-frequency \ period \ for \ cell \ identification \ as \ shown \ in \ section \ 8.6.2.1.2.2.$ $T_{Measurement_Period_intra_TDD_CSI_RS_DRX} \ is \ the \ intra-frequency \ period \ for \ TP \ measurement \ as \ shown \ in \ table \ 8.6.3.1.2.2-1.$

Identification of a TP shall include identification of the cell and additionally performing a single measurement with measurement period of $T_{Measurement_Period_intra_TDD_CSI-RS_DRX}$ when DRX is used. If higher layer filtering is used, an additional TP identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{Measurement_Period}$ _intra_TDD_CSI-RS_DRX as shown in table 8.6.3.1.2.2-1, when DRX is in use. The UE shall be capable of performing CSI-RSRP measurements for 3 identified intra-frequency TPs, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{Measurement_Period_intra_TDD_CSI-RS_DRX}$

Table 8.6.3.1.2.2-1: Requirement to measure TDD intrafrequency TP

Measurement bandwidth [RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{Measurement_} Period intra_TDD_ CSI-RS_DRX [ms]
≥ 6	≥2	5*Max{T _{DMTC periodicity} , DRX cycle length}
≥ 25	≥2	3*Max{T _{DMTC periodicity} , DRX cycle length}

 $T_{DMTC_periodicity}$ is the discovery signal measurement timing configuration periodicity of higher layer.

The CSI-RSRP measurement accuracy for all measured TPs shall be as specified in the sub-clauses 9.1.14.3.

8.6.3.1.2.2.1 Measurement Reporting Requirements

8.6.3.1.2.2.1.1 Periodic Reporting

Reported CSI-RSRP measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.14.3.

8.6.3.1.2.2.1.2 Event-triggered Periodic Reporting

Reported CSI-RSRP measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.14.3.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.6.3.1.2.2.1.3.

8.6.3.1.2.2.1.3 Event Triggered Reporting

Reported CSI-RSRP measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.14.3.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times \text{TTI}_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_intra_TP_SCE_DRX}$ defined in Clause 8.6.3.1.2.2. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a TP which has been detectable at least for the time period $T_{identify_intra_TP_SCE_DRX}$ defined in clause 8.6.3.1.2.2 becomes undetectable for a period \leq 5 seconds and then the TP becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_intra_TDD_CSI_RS_DRX}$ provided the timing to that TP has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.6.3.2 E-UTRAN inter frequency measurements

The UE shall be able to identify new inter-frequency TPs and perform CSI-RSRP measurements of inter-frequency TP with an explicit inter-frequency TP list containing physical layer cell identities. The discovery signal occasion and the measurement gap should be aligned, provided that also the following additional conditions are fulfilled:

Entire discovery signal occasion should be contained in the measurement gap.

The subframe contained discovery signal for the measurement is not overlapped with the first 0.5ms period and the last 0.5ms period in every gap.

8.6.3.2.1 E-UTRAN FDD – FDD inter frequency measurements

8.6.3.2.1.1 E-UTRAN FDD – FDD inter frequency measurements when no DRX is used

When measurement gaps are scheduled, or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new FDD inter-frequency TP within T_{identify_inter_TP_SCE} according to the following expression:

 $T_{identify_inter_TP_SCE} = T_{identify_Inter_SCE} + T_{Measurement_Period_inter_FDD_CSI-RS}$

A TP shall be considered detectable when

- CSI-RSRP related side conditions given in Sections 9.1.14.3 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.11 for a corresponding Band

 $T_{identify_inter_SCE}$ is the inter-frequency period for cell identification as shown in section 8.6.2.2.1.1. N_{freq} is defined in clause 8.1.2.1.1. $T_{Measurement_Period_inter_FDD_CSI-RS}$ is the inter-frequency period for TP measurement as shown in table 8.6.3.2.1.1-1.

When measurement gaps are scheduled for FDD inter frequency measurements, or the UE supports capability of conducting such measurements without gaps, the UE physical layer shall be capable of reporting CSI-RSRP measurements to higher layers with measurement accuracy as specified in sub-clauses 9.1.14.3, with measurement period given by table 8.6.3.2.1.1-1.

The UE shall be capable of performing CSI-RSRP measurements of at least 3 identified inter-frequency TPs per FDD inter-frequency for up to 3 FDD inter-frequencies and the UE physical layer shall be capable of reporting CSI-RSRP measurements to higher layers with the measurement period defined in table 8.6.3.2.1.1-1 when no DRX is in use, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps.

Table 8.6.3.2.1.1-1: Requirement to measure FDD inter frequency TP

Measurement bandwidth [RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{Measurement_Period} inter_FDD_ CSI-RS [ms]
≥ 6	≥1	$5*Max\{T_{DMTC_periodicity}, MGRP\}*N_{freq}$
≥ 25	≥1	3*Max{T _{DMTC periodicity} , MGRP }*N _{freq}

 $T_{DMTC_periodicity}$ is the discovery signal measurement timing configuration periodicity of higher layer.

The CSI-RSRP measurement accuracy for all measured TPs shall be as specified in the sub-clauses 9.1.14.3.

8.6.3.2.1.1.1 Measurement Reporting Requirements

8.6.3.2.1.1.1.1 Periodic Reporting

Reported CSI-RSRP measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.14.3.

8.6.3.2.1.1.1.2 Event-triggered Periodic Reporting

Reported CSI-RSRP measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.14.3.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.6.3.2.1.1.1.3.

8.6.3.2.1.1.1.3 Event Triggered Reporting

Reported CSI-RSRP measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.14.3.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times \text{TTI}_{\text{DCCH}}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_inter_TP_SCE}$ defined in Clause 8.6.3.2.1.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a TP which has been detectable at least for the time period $T_{identify_inter_TP_SCE}$ defined in clause 8.6.3.2.1.1 becomes undetectable for a period ≤ 5 seconds and then the TP becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_inter_FDD_CSI_RS}$ provided the timing to that TP has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.6.3.2.1.2 E-UTRAN FDD – FDD inter frequency measurements when DRX is used

When DRX is in use, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new detectable E-UTRAN FDD inter frequency TP within $T_{identify_inter_TP_SCE_DRX}$ according to the following expression:

 $T_{identify_inter_TP_SCE_DRX} = T_{identify_inter_SCE_DRX} + T_{Measurement_Period_inter_FDD_CSI-RS_DRX}$

A TP shall be considered detectable when

- CSI-RSRP related side conditions given in Sections 9.1.14.3 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.11 for a corresponding Band

 $T_{identify_inter_SCE_DRX}$ is the inter-frequency period for cell identification as shown in section 8.6.2.2.1.2. N_{freq} is defined in clause 8.1.2.1.1. $T_{Measurement_Period_inter_FDD_CSI-RS_DRX}$ is the inter-frequency period for TP measurement as shown in table 8.6.3.2.1.2-1.

When measurement gaps are scheduled for FDD inter frequency measurements, or the UE supports capability of conducting such measurements without gaps, the UE physical layer shall be capable of reporting CSI-RSRP measurements to higher layers with measurement accuracy as specified in sub-clauses 9.1.14.3, with measurement period given by table 8.6.3.2.1.2-1.

The UE shall be capable of performing CSI-RSRP measurements of at least 3 identified inter-frequency TPs per FDD inter-frequency for up to 3 FDD inter-frequencies and the UE physical layer shall be capable of reporting CSI-RSRP measurements to higher layers with the measurement period defined in table 8.6.3.2.1.2-1 when DRX is in use, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps.

Table 8.6.3.2.1.2-1: Requirement to measure FDD inter frequency TP

Measurement bandwidth [RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{Measurement_} Period inter_FDD_ CSI-RS_DRX [ms]
≥ 6	≥1	5* <i>Max</i> {T _{DMTC_periodicity} , DRX cycle length, MGRP}* <i>N</i> _{freq}
≥ 25	≥1	$3*Max{T_{DMTC_periodicity}, DRX cycle}$ length, MGRP}* N_{freq}

 $T_{DMTC_periodicity}$ is the discovery signal measurement timing configuration periodicity of higher layer.

The CSI-RSRP measurement accuracy for all measured TPs shall be as specified in the sub-clauses 9.1.14.3.

8.6.3.2.1.2.1 Measurement Reporting Requirements

8.6.3.2.1.2.1.1 Periodic Reporting

Reported CSI-RSRP measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.14.3 respectively.

8.6.3.2.1.2.1.2 Event-triggered Periodic Reporting

Reported CSI-RSRP measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.14.3.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8,6,3,2,1,2,1,3.

8.6.3.2.1.2.1.3 Event Triggered Reporting

Reported CSI-RSRP measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.14.3.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: 2 x TTI_{DCCH}. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_inter_TP_SCE_DRX}$ defined in clause 8.6.3.2.1.2. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a TP which has been detectable at least for the time period $T_{identify_inter_TP_SCE_DRX}$ defined in clause 8.6.3.2.1.2 and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_inter_FDD_CSI_RS_DRX}$ provided the timing to that TP has not changed more than \pm 50 Ts while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.6.3.2.2 E-UTRAN TDD – TDD inter frequency measurements

8.6.3.2.2.1 E-UTRAN TDD – TDD inter frequency measurements when no DRX is used

When measurement gaps are scheduled, or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new TDD inter-frequency TP within $T_{identify_inter_TP_SCE}$ according to the following expression:

 $T_{identify_inter_TP_SCE} = T_{identify_inter_SCE} + T_{Measurement_Period_inter_TDD_CSI-RS}$

A TP shall be considered detectable when

- CSI-RSRP related side conditions given in Sections 9.1.14.3 are fulfilled for a corresponding Band,
- SCH RP and SCH Ês/Iot according to Annex B.2.11 for a corresponding Band

 $T_{identify_inter_SCE}$ is the inter-frequency period for cell identification as shown in section 8.6.2.2.2.1. N_{freq} is defined in clause 8.1.2.1.1. $T_{Measurement_Period_inter_TDD_CSI-RS}$ is the inter-frequency period for TP measurement as shown in table 8.6.3.2.2.1-1.

When measurement gaps are scheduled for TDD inter frequency measurements, or the UE supports capability of conducting such measurements without gaps, the UE physical layer shall be capable of reporting RSRP measurements to higher layers with measurement accuracy as specified in sub-clauses 9.1.14.3, with measurement period given by table 8.6.3.2.2.1-1.

The UE shall be capable of performing CSI-RSRP measurements of at least 3 identified inter-frequency TP per TDD inter-frequency for up to 3TDD inter-frequencies and the UE physical layer shall be capable of reporting CSI-RSRP measurements to higher layers with the measurement period defined in table 8.6.3.2.2.1-1 when no DRX is in use, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps.

Table 8.6.3.2.2.1-1: Requirement to measure TDD inter frequency TP

Measurement bandwidth [RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{Measurement_} Period inter_TDD_ CSI-RS [ms]
≥ 6	≥2	5*Max{T _{DMTC periodicity} , MGRP}*N _{freq}
≥ 25	≥2	3*Max{T _{DMTC_periodicity} , MGRP }*N _{freq}

 $T_{DMTC_periodicity}$ is the discovery signal measurement timing configuration periodicity of higher layer.

The CSI-RSRP measurement accuracy for all measured TPs shall be as specified in the sub-clauses 9.1.14.3.

8.6.3.2.2.1.1 Measurement Reporting Requirements

8.6.3.2.2.1.1.1 Periodic Reporting

Reported CSI-RSRP measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.14.3.

8.6.3.2.2.1.1.2 Event-triggered Periodic Reporting

Reported CSI-RSRP measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.14.3.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.6.3.2.2.1.1.3.

8.6.3.2.2.1.1.3 Event Triggered Reporting

Reported CSI-RSRP measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.14.3.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_inter_TP_SCE}$ defined in clause 8.6.3.2.2.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a TP which has been detectable at least for the time period $T_{identify_inter_TP_SCE}$ defined in clause 8.6.3.2.2.1 and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_inter_TDD_CSI-RS}$ provided the timing to that TP has not changed more than \pm 50 Ts while measurementgap has not been available and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.6.3.2.2.2 E-UTRAN CSI-RS based TDD – TDD inter frequency measurements when DRX is used

When DRX is in use, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps, the UE shall be able to identify a new detectable E-UTRAN TDD inter frequency TP within $T_{identify_inter_TP_SCE_DRX}$ according to the following expression:

 $T_{identify_inter_TP_SCE_DRX} = T_{identify_inter_SCE_DRX} + T_{Measurement_Period_inter_TDD_CSI-RS_DRX}$

A TP shall be considered detectable when

- RSRP related side conditions given in Sections 9.1.14.3 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.11 for a corresponding Band

 $T_{identify_inter_SCE_DRX}$ is the inter-frequency period for cell identification as shown in section 8.6.2.2.2.2. N_{freq} is defined in clause 8.1.2.1.1. $T_{Measurement_Period_inter_TDD_CSI-RS_DRX}$ is the inter-frequency period for TP measurement as shown in table 8.6.3.2.2.2-1.

When measurement gaps are scheduled for TDD inter frequency measurements, or the UE supports capability of conducting such measurements without gaps, the UE physical layer shall be capable of reporting CSI-RSRP measurements to higher layers with measurement accuracy as specified in sub-clauses 9.1.14.3, with measurement period given by table 8.6.3.2.1.2-1.

The UE shall be capable of performing CSI-RSRP measurements of at least 3 identified inter-frequency TPs per TDD inter-frequency for up to 3 TDD inter-frequencies and the UE physical layer shall be capable of reporting CSI-RSRP measurements to higher layers with the measurement period defined in table 8.6.3.2.2.2-1 when DRX is in use, either measurement gaps are scheduled or the UE supports capability of conducting such measurements without gaps.

Table 8.6.3.2.2.2-1: Requirement to measure TDD inter frequency TP

Measurement bandwidth [RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{Measurement_} Period inter_TDD_ CSI-RS_DRX [ms]
≥ 6	≥2	$5*Max{T_{DMTC_periodicity}, DRX cycle}$ length, MGRP $}*N_{freq}$
≥ 25	≥2	3* <i>Max</i> {T _{DMTC_periodicity} , DRX cycle length, MGRP}* <i>N</i> _{freq}

T_{DMTC_periodicity} is the discovery signal measurement timing configuration periodicity of higher layer.

The CSI-RSRP measurement accuracy for all measured TPs shall be as specified in the sub-clauses 9.1.14.3.

8.6.3.2.2.2.1 Measurement Reporting Requirements

8.6.3.2.2.2.1.1 Periodic Reporting

Reported CSI-RSRP measurements contained in periodically triggered measurement reports shall meet the requirements in sections 9.1.14.3.

8.6.3.2.2.1.2 Event-triggered Periodic Reporting

Reported CSI-RSRP measurements contained in event triggered periodic measurement reports shall meet the requirements in sections 9.1.14.3.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.6.3.2.2.2.1.3.

8.6.3.2.2.1.3 Event Triggered Reporting

Reported CSI-RSRP measurements contained in event triggered measurement reports shall meet the requirements in sections 9.1.14.3.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_inter_TP_SCE_DRX}$ defined in Clause 8.6.3.2.2.2. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a TP which has been detectable at least for the time period $T_{identify_inter_TP_SCE_DRX}$ in clause 8.6.3.2.2.2 and then triggers the measurement report as per TS 36.331 [2], the event triggered measurement reporting delay shall be less than $T_{Measurement_Period_inter_TDD_CSI-RS_DRX}$ provided the timing to that TP has not changed more than \pm 50 Ts while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.6.3.2.3 E-UTRAN TDD – FDD inter frequency measurements

8.6.3.2.3.1 E-UTRAN TDD – FDD inter frequency measurements when no DRX is used

The requirements in this clause shall apply to UE supporting FDD and TDD.

The requirements in clause 8.6.3.2.1.1 also apply for this section.

8.6.3.2.3.2 E-UTRAN TDD – FDD inter frequency measurements when DRX is used

The requirements in this clause shall apply to UE supporting FDD and TDD.

The requirements in clause 8.6.3.2.1.2 also apply for this section.

8.6.3.2.4 E-UTRAN FDD – TDD inter frequency measurements

8.6.3.2.4.1 E-UTRAN FDD – TDD inter frequency measurements when no DRX is used

The requirements in this clause shall apply to UE supporting FDD and TDD.

The requirements in clause 8.6.3.2.2.1 also apply for this section.

8.6.3.2.4.2 E-UTRAN FDD – TDD inter frequency measurements when DRX is used

The requirements in this clause shall apply to UE supporting FDD and TDD.

The requirements in clause 8.6.3.2.2.2 also apply for this section.

8.7 Discovery signal measurements for E-UTRA carrier aggregation

8.7.1 Introduction

Requirements in this clause are applicable to UE supporting E-UTRA FDD, E-UTRA TDD and/or E-UTRA TDD-FDD carrier aggregation.

Non configured frequencies may be measured with measurement gaps according to the requirements in clause 8.6.2.2 and clause 8.6.3.2 (E-UTRAN CRS based inter frequency measurements and E-UTRAN CSI-RS based inter frequency measurements).

8.7.2 Requirements for CRS based discovery signal measurements for E-UTRA carrier aggregation

8.7.2.1 Measurements of the primary component carrier

CRS based measurements of cells on the primary component carrier shall meet all applicable requirements (FDD or TDD) in clause 8.6.2.1.

8.7.2.2 Measurements of a secondary component carrier

A Secondary component carrier may be activated and deactivated by MAC-CE commands as specified in [17]. The applicable performance requirements depend on whether the SCell on the corresponding frequency is actived or deactivated.

8.7.2.3 Measurements of a secondary component carrier with active SCell

When the SCell is activated, measurement performance requirements for the frequency are those given in clause 8.6.2.1. If common DRX is in use, then the requirements for that secondary component carrier are given by the applicable DRX requirements (FDD or TDD) in clause 8.6.2.1, otherwise the non DRX requirements are applicable. The applicable measurement accuracy requirements are in clause 9.1.15.

8.7.2.4 Measurements of a secondary component carrier with deactivated SCell

This clause defines the measurement requirements of a secondary component carrier with deactivated SCell based on the parameter *measCycleSCell* defined in TS 36.331 [2].

8.7.2.4.1 E-UTRAN secondary component carrier measurements when no common DRX is used

When no DRX is in use the UE shall be able to identify a new detectable FDD or TDD cell on a secondary component carrier within $T_{identify_scc_CRS}$, according to the parameter measCycleSCell where $T_{identify_scc_CRS} = 13 *measCycleSCell + T_{measure_scc_CRS}$

A cell shall be considered detectable when

- RSRP related side condition given in Clause 9.1.15 are fulfilled for a corresponding Band,
- SCH RP_{dBm} and SCH Ês/Iot according to Annex B.2.10 for a corresponding Band

The measurement period for deactivated scell measurements is $T_{measure_scc_CRS}$ according to the parameter measCycleSCell shown in Tables 8.7.2.4.1-1 and 8.7.2.4.1-2.

Table 8.7.2.4.1-1: Requirement to measure intra frequency cell on FDD SCC with deactivated SCell

	Measurement bandwidth[RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{measure_scc_CRS} [ms]
	≥6	≥1	5* measCycleSCell
ĺ	≥25	≥1	3 * measCycleSCell

Table 8.7.2.4.1-2: Requirement to measure intra frequency cell on TDD SCC with deactivated SCell

Measurement bandwidth [RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{measure_scc_CRS} [ms]
≥6	≥2	5* measCycleSCell
≥25	≥2	3 * measCycleSCell

The UE shall be capable of performing RSRP and RSRQ measurements for 3 identified cells on a secondary component carrier, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{\text{measure scc CRS}}$.

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.15.

A UE may reconfigure the receiver bandwidth or turn on/off one of the RF chains when performing measurements on up to four SCCs with deactivated SCell. This may cause interruptions on PCell or activated SCell(s) or both that are specified in Section 7.8.

8.7.2.4.1.1 Measurement Reporting Requirements

8.7.2.4.1.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in clause 9.

8.7.2.4.1.1.2 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in clause 9.

The first report in event triggered periodic CRS based measurement reporting shall meet the requirements specified in clause 8.7.2.4.1.1.3.

8.7.2.4.1.1.3 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in clause 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which is caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_scc_CRS}$ defined in Clause 8.7.2.4.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_scc_SCE}$ defined in clause 8.7.2.4.1 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_scc_CRS}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.7.2.4.2 E-UTRAN secondary component carrier measurements when common DRX is used

When DRX is in use the UE shall be able to identify a new detectable FDD or TDD cell on a secondary component carrier within $T_{identify_scc}$, according to the parameter measCycleSCell where $T_{identify_scc_SCE_DRX} = 17*Max(measCycleSCell$, DRX cycle length)+ $T_{measure_scc_CRS_DRX}$.

A cell shall be considered detectable when

- RSRP related side condition given in Clause 9.1.15 are fulfilled for a corresponding Band,
- SCH RP_{dBm} and SCH Ês/Iot according to Annex B.2.10 for a corresponding Band

The measurement period for deactivated scell measurements is $T_{measure_scc_CRS_DRX}$ according to the parameter *measCycleSCell* shown in Tables 8.7.2.4.2-1 and 8.7.2.4.2-1.

Table 8.7.2.4.2-1: Requirement to measure intrafrequency cell on FDD SCC with deactivated SCell

Measurement bandwidth[RB]	Discovery signal occasion duration (<i>ds-OccasionDuration</i>) [ms]	T _{measure_scc_CRS_DRX} [ms]
≥6	≥1	5* Max{ measCycleSCell, DRX cycle length }
≥25	≥1	3 * Max{ measCycleSCell, DRX cycle length }

Table 8.7.2.4.2-2: Requirement to measure intrafrequency cell on TDD SCC with deactivated SCell

Measurement bandwidth[RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{measure_scc_CRS_DRX} [ms]
≥6	≥2	5* Max{ measCycleSCell, DRX cycle length }
≥25	≥2	3 * Max{ measCycleSCell, DRX cycle length }

The UE shall be capable of performing RSRP and RSRQ measurements for 3 identified cells on a secondary component carrier, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{\text{measure_scc_CRS_DRX}}$.

The measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.15.

A UE may reconfigure receiver bandwidth taking into account the SCell activation/deactivation status, and when making measurements of cells on up to four SCCs with deactivated SCell. This may cause interruptions (packet drops) to a PCell or activated SCell(s) or both when the PCell and the SCell belong to the same frequency band. No interruptions while the On Duration timer is running shall be allowed when common DRX is used. The requirement considers only interruptions due to reconfiguration of the receiver bandwidth, and not due to other causes such as RF impairments or channel conditions.

8.7.2.4.2.1 Measurement Reporting Requirements

8.7.2.4.2.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in clause 9.

8.7.2.4.2.1.2 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in clause 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.7.2.4.2.1.3.

8.7.2.4.2.1.3 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in clause 9.

The UE shall not send any event triggered CRS based measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which is caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_scc_CRS}$ defined in Clause 8.7.2.4.2. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_scc_SCE_DRX}$ defined in clause 8.7.2.4.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_scc_CRS_DRX}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.7.3 Requirements for CSI-RS based discovery signal measurements for E-UTRA carrier aggregation

8.7.3.1 Measurements of the primary component carrier

Measurements of cells on the primary component carrier shall meet all applicable requirements (FDD or TDD) in clause 8.6.3.1.

8.7.3.2 Measurements of a secondary component carrier

A Secondary component carrier may be activated and deactivated by MAC-CE commands as specified in [17]. The applicable performance requirements depend on whether the SCell on the corresponding frequency is actived or deactivated.

8.7.3.3 Measurements of a secondary component carrier with active SCell

When the SCell is activated, measurement performance requirements for the frequency are those given in clause 8.6.3.1. If common DRX is in use, then the requirements for that secondary component carrier are given by the applicable DRX requirements (FDD or TDD) in clause 8.6.3.1, otherwise the non DRX requirements are applicable. The applicable measurement accuracy requirements are in clause 9.1.15.

8.7.3.4 Measurements of a secondary component carrier with deactivated SCell

This clause defines the measurement requirements of a secondary component carrier with deactivated SCell based on the parameter *measCycleSCell* defined in TS 36.331 [2].

8.7.3.4.1 E-UTRAN secondary component carrier measurements when no common DRX is used

When no DRX is in use the UE shall be able to identify a new detectable FDD or TDD TP on a secondary component carrier within $T_{identify_scc_TP_SCE}$, according to the parameter measCycleSCell, where $T_{identify_scc_TP_SCE} = T_{identify_scc_SCE} + T_{measure_scc_CSI-RS}$,

A cell shall be considered detectable when

- CSI-RSRP related side condition given in Clause 9.1.15 are fulfilled for a corresponding Band,
- SCH_RP|_{dBm} and SCH Ês/Iot according to Annex B.2.11 for a corresponding Band

 $T_{identify_scc_SCE}$ is the intra-frequency period for cell identification in section 8.7.2.4.1. $T_{measure_scc_CSI-RS}$ is the intra-frequency period for TP measurement in table 8.7.3.4.1-1.

The measurement period for deactivated scell measurements is $T_{measure_scc_CSI-RS}$ according to the parameter *measCycleSCell* as shown in tables 8.7.3.4.1-1 and 8.7.3.4.1-1.

Table 8.7.3.4.1-1: Requirement to measure intra frequency TP on FDD SCC with deactivated SCell

Measurement bandwidth [RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{measure_scc_CSI-RS} [ms]
≥ 6	≥1	5* measCycleSCell
≥ 25	≥1	3* measCycleSCell

Table 8.7.3.4.1-2: Requirement to measure intra frequency TP on TDD SCC with deactivated SCell

Measurement bandwidth [RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{measure_scc_csi-Rs} [ms]
≥ 6	≥2	5* measCycleSCell
≥ 25	≥2	3* measCycleSCell

The UE shall be capable of performing RSRP measurements for 3 identified TPs on a secondary component carrier, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_scc_CSI-RS}$.

The measurement accuracy for all measured TPs shall be as specified in the sub-clause 9.1.15.

A UE may reconfigure the receiver bandwidth or turn on/off one of the RF chains when performing measurements on up to four SCCs with deactivated SCell. This may cause interruptions on PCell or activated SCell(s) or both that are specified in Section 7.8.

8.7.3.4.1.1 Measurement Reporting Requirements

8.7.3.4.1.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in clause 9.

8.7.3.4.1.1.2 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in clause 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.7.3.4.1.1.3.

8.7.3.4.1.1.3 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in clause 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which is caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_scc_TP_SCE}$ defined in Clause 8.7.3.4.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a TP which has been detectable at least for the time period $T_{identify_scc_TP_SCE}$ defined in clause 8.7.3.4.1 becomes undetectable for a period ≤ 5 seconds and then the TP becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_scc_CSI-RS}$ provided the timing to that TP has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.7.3.4.2 E-UTRAN secondary component carrier measurements when common DRX is used

When DRX is in use the UE shall be able to identify a new detectable FDD or TDD TP on a secondary component carrier within $T_{identify_scc_TP_SCE_DRX}$, according to the parameter measCycleSCell, where $T_{identify_scc_TP_SC_DRX} = T_{identify_scc_SCE_DRX} + T_{measure_scc_CSI-RS_DRX}$,

A cell shall be considered detectable when

- CSI-RSRP related side condition given in Clause 9.1.15 are fulfilled for a corresponding Band,
- SCH_RP|_{dBm} and SCH Ês/Iot according to Annex B.2.11 for a corresponding Band

 $T_{identify_scc_SCE_DRX}$ is the intra-frequency period for cell identification in section 8.7.2.4.2. $T_{measure_scc_CSI-RS_DRX}$ is the intra-frequency period for TP measurement in table 8.7.3.4.2-1.

The measurement period for deactivated scell measurements is $T_{measure_scc_CSI-RS_DRX}$ according to the parameter measCycleSCell as shown in tables 8.7.3.4.2-1 and 8.7.3.4.2-2.

Table 8.7.3.4.2-1: Requirement to measure intrafrequency TP on FDD SCC with deactivated SCell

Measurement bandwidth [RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{measure_scc_TP_SCE_DRX} [ms]
≥ 6	≥1	5* max {measCycleSCell, DRX cycle length }
≥ 25	≥1	3* max {measCycleSCell, DRX cycle length }

Table 8.7.3.4.2-1: Requirement to measure intrafrequency TP on TDD SCC with deactivated SCell

Measurement bandwidth [RB]	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{measure_scc_TP_SCE_DRX} [ms]
≥ 6	≥2	5* max {measCycleSCell, DRX cycle length }
≥ 25	≥2	3* max {measCycleSCell, DRX cycle length }

The UE shall be capable of performing CSI-RSRP measurements for 3 identified TPs on a secondary component carrier, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_scc_CSI-RS_DRX}$.

The measurement accuracy for all measured TPs shall be as specified in the sub-clause 9.1.15.

A UE may reconfigure receiver bandwidth taking into account the SCell activation/deactivation status, and when making measurements of TPs on up to four SCCs with deactivated SCell. This may cause interruptions (packet drops) to a PCell or activated SCell(s) or both when the PCell and the SCell belong to the same frequency band. No interruptions while the On Duration timer is running shall be allowed when common DRX is used. The requirement considers only interruptions due to reconfiguration of the receiver bandwidth, and not due to other causes such as RF impairments or channel conditions.

8.7.3.4.2.1 Measurement Reporting Requirements

8.7.3.4.2.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in clause 9.

8.7.3.4.2.1.2 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in clause 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in clause 8.7.3.4.2.1.3.

8.7.3.4.2.1.3 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in clause 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which is caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_scc_TP_SCE_DRX}$ defined in Clause 8.7.3.4.2. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a TP which has been detectable at least for the time period $T_{identify_scc_TP_SCE_DRX}$ defined in clause 8.7.3.4.2 becomes undetectable for a period ≤ 5 seconds and then the TP becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_scc_CSI-RS_DRX}$ provided the timing to that TP has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.8 Measurements for E-UTRA dual connectivity

8.8.1 Introduction

This clause contains requirements for UE supporting E-UTRA dual connectivity. Requirements in this clause are applicable to UEs which have been configured with one SCell in either MCG or SCG and one PSCell for inter-band dual connectivity. Requirements in this clause are applicable to E-UTRA FDD, E-UTRA TDD and E-UTRA TDD-FDD dual connectivity.

8.8.2 Intra-frequency measurements requirements on PCell

PCell intra-frequency measurements shall meet all applicable requirements in clause 8.1.2.2. If MCG DRX is in use, then the PCell intra-frequency requirements for when DRX is in use in clause 8.1.2.2 shall apply and shall depend on the MCG DRX cycle. Otherwise, the requirements for when DRX is not in use shall apply. The applicable measurement accuracy requirements are in clause 9.1.

8.8.3 Intra-frequency measurements requirements on PSCell

PSCell starts with activated state upon configuration and cannot be deactivated. PSCell intra-frequency measurements shall meet all applicable requirements in clause 8.1.2.2. If SCG DRX is in use, then the PSCell intra-frequency requirements for when DRX is in use in clause 8.1.2.2 shall apply and shall depend on the SCG DRX cycle. Otherwise, the requirements for when DRX is not in use shall apply. The applicable measurement accuracy requirements are in clause 9.1.

8.8.4 Inter-frequency and inter-RAT measurement requirements

Inter-frequency measurements shall meet all applicable requirements in clause 8.1.2.3. If MCG DRX is in use, then the inter-frequency requirements for when DRX is in use in clause 8.1.2.3 shall apply and shall depend on the MCG DRX cycle. Otherwise, the requirements for when DRX is not in use shall apply. The applicable measurement accuracy requirements are in clause 9.1.

Inter-RAT measurements shall meet all applicable requirements in clause 8.1.2.4. If MCG DRX is in use, then the inter-RAT requirements for when DRX is in use in clause 8.1.2.4 shall apply and shall depend on the MCG DRX cycle. Otherwise, the requirements for when DRX is not in use shall apply. The applicable measurement accuracy requirements are in clause 9.2, 9.3, 9.4 and 9.5.

8.8.5 Intra-frequency measurements with autonomous gaps

8.8.5.1 Identification of a new CGI of E-UTRA cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose 'reportCGI'. The UE may make autonomous gaps in both MCG and SCG in downlink reception and uplink transmission for receiving MIB and SIB1 messages according to clause 5.5.3.1 of TS 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or whether the SCell is configured, the UE shall be able to identify a new CGI of E-UTRA cell within:

$$T_{identify_CGI, intra} = T_{basic_identify_CGI, intra}$$
 ms

where

 $T_{basic_identify_CGI, intra} = 150$ ms. This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of an E-UTRA cell is defined, provided that the E-UTRA cell has been already identified by the UE.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in Clause 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.2 for a corresponding Band

The MIB of an E-UTRA cell whose CGI is identified shall be considered decodable by the UE provided that the PBCH demodulation requirements in [5] are met.

The requirement for identifying a new CGI of an E-UTRA cell within $T_{basic_identify_CGI,intra}$ is applicable when no DRX is used as well as when any of the DRX cycles specified in TS 36.331 [2] is used.

Within the time $T_{identify_CGI,\,intra}$ ms, over which the UE identifies the CGI of a new E-UTRA cell, the UE shall transmit at least a minimum number of ACK/NACKs on cells in MCG and SCG, respectively, as specified in Table 8.8.5.1-1. The requirement depends on duplex mode, dual connectivity mode of operation, and whether a cell belongs to MCG or SCG, and is further conditioned on:

- there is continuous DL data allocation,
- no DRX cycle is used,
- no measurement gaps are configured,
- only one code word is transmitted in each subframe,
- no MBSFN subframes are configured.

Table 8.8.5.1-1: Requirement on minimum number of ACK/NACKs to transmit during Tidentify CGI, intra-

Serving cell configuration	Minimum number of transmitted ACK/NACKs		K/NACKs	
	Synchronous operation		Asynchronous operation	
	MCG	SCG	MCG	SCG
FDD	60		60	49
TDD UL/DL configuration 0	18		N/A	N/A
TDD UL/DL configuration 1	35		N/A	N/A
TDD UL/DL configuration 2	43		N/A	N/A
TDD UL/DL configuration 3	36		N/A	N/A
TDD UL/DL configuration 4	39		N/A	N/A
TDD UL/DL configuration 5	42		N/A	N/A
TDD UL/DL configuration 6	30		N/A	N/A

8.8.5.2 ECGI reporting delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle. If IDC autonomous denial is configured, an additional delay can be expected.

8.8.6 Inter-frequency measurements with autonomous gaps

8.8.6.1 Identification of a new CGI of E-UTRA cell with autonomous gaps

No explicit neighbour list is provided to the UE for identifying a new CGI of E-UTRA cell. The UE shall identify and report the CGI when requested by the network for the purpose 'reportCGI'. The UE may make autonomous gaps in both MCG and SCG in downlink reception and uplink transmission for receiving MIB and SIB1 messages according to clause 5.5.3.1 of TS 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or whether the SCell is configured, the UE shall be able to identify a new CGI of E-UTRA cell within:

$$T_{\text{identify CGI, inter}} = T_{\text{basic identify CGI, inter}}$$
 ms

where

 $T_{basic_identify_CGI,\;inter} = 150$ ms. This is the time period used in the above equation where the maximum allowed time for the UE to identify a new CGI of an E-UTRA cell is defined, provided that the E-UTRA cell has been already identified by the UE.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in Clause 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex B.2.2 for a corresponding Band

The MIB of an E-UTRA cell whose CGI is identified shall be considered decodable by the UE provided that the PBCH demodulation requirements in [5] are met.

The requirement for identifying a new CGI of an E-UTRA cell within $T_{basic_identify_CGI,inter}$ is applicable when no DRX is used as well as when any of the DRX cycles specified in TS 36.331 [2] is used.

Within the time $T_{identify_CGI,inter}$ ms, over which the UE identifies the CGI of a new E-UTRA cell, the UE shall transmit at least a minimum number of ACK/NACKs on cells in MCG and SCG, respectively, as specified in Table 8.8.6.1-1. The requirement depends on duplex mode, dual connectivity mode of operation, and whether a cell belongs to MCG or SCG, and is further conditioned on:

- there is continuous DL data allocation,
- no DRX cycle is used,
- no measurement gaps are configured,
- only one code word is transmitted in each subframe,
- no MBSFN subframes are configured.

Table 8.8.6.1-1: Requirement on minimum number of ACK/NACKs to transmit during Tidentify_CGI, inter-

Serving cell configuration	Minimum number of transmitted ACK/NACKs			
	Synchronous operation		Asynchrono	us operation
	MCG	SCG	MCG	SCG
FDD	60		60	49
TDD UL/DL configuration 0	18		N/A	N/A
TDD UL/DL configuration 1	30		N/A	N/A

8.8.6.2 ECGI reporting delay

The ECGI reporting delay occurs due to the delay uncertainty when inserting the ECGI measurement report to the TTI of the uplink DCCH. The delay uncertainty is twice the TTI of the uplink DCCH. In case DRX is used, the ECGI reporting may be delayed until the next DRX cycle. If IDC autonomous denial is configured, an additional delay can be expected.

8.8.7 SSTD Measurements for E-UTRA Dual Connectivity

8.8.7.1 Introduction

This clause contains SSTD measurement requirements on UE capabilities for support of E-UTRA dual connectivity. Requirements in this clause are applicable to all dual connectivity capable UE which have been configured with PCell and one SCell. Requirements in this clause are applicable for E-UTRA FDD, E-UTRA TDD and E-UTRA TDD-FDD dual connectivity.

8.8.7.2 SSTD Measurements

When no DRX is used the physical layer measurement period of the SSTD measurement shall be 200 ms.

When DRX is used in RRC_CONNECTED state the physical layer measurement period ($T_{measure_FDD_SSTD1}$) of the SSTD measurement shall be as specified in table 8.8.7.2-1.

Table 8.8.7.2-1: FDD SSTD measurement requirement when DRX is used

	re_FDD_SSTD1 (s) (DRX cycles)	
≤0.04	0.2 (Note1)	
0.04 <drx-cycle≤2.56 (5)<="" note2="" td=""></drx-cycle≤2.56>		
Note1: Number of DRX cycle depends upon the DRX cycle in use		
Note2: Time depends upon the DRX cycle in use		

If PCell is changed without changing PCC, and/or if PSCell is changed without changing a frequency of PSCell or if both PCell and PSCell are change by swapping the PCC with the frequency of PSCell while the UE is performing SSTD measurements, then the UE shall also meet the SSTD measurement and accuracy requirements corresponding to the new PCell and/or PSCell. However in this case the physical layer measurement period of the SSTD measurement shall not exceed $T_{\text{measure_FDD_SSTD2}}$ as defined in the following expression:

$$T_{\text{measure FDD SSTD2}} = (N+M+1)*(T_{\text{measure FDD SSTD1}}) + N*T_{\text{PCell change DC}} + M*T_{\text{PSCell change DC}}$$

Where:

 $N \ is \ the \ number \ of \ times \ the \ PCell \ is \ changed \ over \ the \ measurement \ period \ (T_{measure_FDD_SSTD2}),$

M is the number of times the PSCell is changed over the measurement period (T_{measure_FDD_SSTD2}),

T_{PCell change DC} is the time necessary to change the PCell; it can be up to [25 ms],

T_{PSCell change DC} is the time necessary to change the PSCell; it can be up to [25 ms].

The measurement accuracy for the SSTD measurement when DRX is used as well as when no DRX is used shall be as specified in the sub-clause 9.X.X.

8.8.7.3 SSTD Measurement Reporting Delay

This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes any delay caused by no UL resources for UE to send the measurement report.

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in subclause 9.X.X.

8.8.8 Intra-frequency measurements requirements on SCell

SCell intra-frequency measurements shall meet all applicable requirements in clause 8.3.3. In case where the SCell belongs to MCG, the term "common DRX" in clause 8.3.3 shall be deemed to be replaced with "MCG DRX". In case where the SCell belongs to SCG, the term "common DRX" and PCell in clause 8.3.3 shall be replaced with "SCG DRX" and PSCell, respectively.

8.9 MBSFN Measurements

8.9.1 Introduction

The requirements specified in Section 8.9 apply for MBSFN measurements (MBSFN RSRP, MBSFN RSRQ, and MCH BLER defined in [4]), which are performed in RRC_CONNECTED and logged for MDT by UEs which are MBMS-capable and also indicate their MBSFN measurement logging capability [2].

UE shall measure MBSFN RSRP, MBSFN RSRQ and MCH BLER only in subframes and on carriers where UE is decoding PMCH. The requirements are specified for any carrier where PMCH is received by UE. The requirements specified in this section apply for any carrier frequency with configured MBSFN subframes with PMCH, which may be the same as or different from any serving unicast carrier.

The UE receiving PMCH on any non-serving carrier and performing MBSFN measurements shall not cause interruptions on any serving carrier in unicast subframes and in the subframes with non-MBSFN multicast transmissions such as system information.

8.9.2 MBSFN RSRP Measurements

The UE physical layer shall be capable of performing the MBSFN RSRP measurement [4] within the MBSFN RSRP measurement period and report the measurement, while meeting the MBSFN RSRP measurement accuracy requirements specified in section 9.8.2.

The MBSFN RSRP measurement period is defined as the maximum between [640] ms and the period during which the UE decodes [5, Section 10] 5 subframes containing PMCH transmissions.

The MBSFN RSRP measurement period is the same for UE in DRX, eDRX, and non-DRX.

8.9.3 MBSFN RSRQ Measurements

The UE physical layer shall be capable of performing the MBSFN RSRQ measurement [4] within the MBSFN RSRP measurement period and report the measurement, while meeting the MBSFN RSRQ measurement accuracy requirements specified in section 9.8.3.

The MBSFN RSRQ measurement period is defined as the maximum between [640] ms and the period during which the UE decodes [5, Section 10] 5 subframes containing PMCH transmissions.

The MBSFN RSRQ measurement period is the same for UE in DRX mode, for all DRX and eDRX cycle, and in non-DRX mode.

8.9.4 MCH BLER Measurements

The UE physical layer shall be capable of performing and reporting the MCH BLER measurement [4] to higher layers within the MCH BLER measurement period. The MCH BLER measurement reporting is according to section 9.8.4.

The MCH BLER measurement period is equal to the MBSFN logging interval configured by higher layers [2].

8.10 Proximity-based Services

8.10.1 Introduction

This section contains the requirements for the UE capable of ProSe Direct Communication and/or ProSe Direct Discovery in RRC_CONNECTED state. The ProSe requirements shall apply provided that the sidelink used by the UE for ProSe direct communication and/or ProSe direct discovery is on the carrier of the PCell.

8.10.2 Requirements

When a UE in RRC_CONNECTED state is performing transmissions and/or reception for ProSe Direct Discovery and/or ProSe Direct Communication, the UE shall meet all the requirements specified in Section 8.

Note: The UE may need to interrupt ProSe operation in order to meet the measurement requirements of Section 8.

8.10.2.1 Initiation/Cease of SLSS transmissions with ProSe Direct Discovery

The requirements in this subclause are applicable to a UE capable of ProSe Direct Discovery and SLSS transmission and reception.

The requirements apply when the conditions for SLSS transmissions specified in [2] are met; *networkControlledSyncTx* is not configured; and *syncTxThreshIC* is included in *SystemInformationBlockType19*. The UE shall be capable of measuring the RSRP of the cell used to transmit Prose Direct Discovery announcements and evaluate to initiate/cease SLSS transmissions within T_{evaluate,SLSS} where,

- $T_{\text{evaluate SLSS}} = 0.4$ seconds when UE is not configured with DRX, or,
- $T_{evaluate,SLSS}$ = as specified in Table 8.10.2.1-1 when UE is configured with DRX.

Table 8.10.2.1-1: Tevaluate St SS with ProSe Direct Discovery

DRX cycle length [s]		T _{evaluate,SLSS} [s] (number of DRX cycles)	
≤0.04 0.4 (Note 1)			
0.04 <drx-cycle≤2.56 (6)<="" 2="" note="" td=""><td>Note 2 (6)</td></drx-cycle≤2.56>		Note 2 (6)	
Note1:	Number of DRX cycles depends upon the DRX cycle in use		
Note2:	Time depends upon the DRX cycles in use		

If higher layer filtering is configured, an additional delay in evaluation to initiate/cease SLSS transmissions can be expected.

For the cell used to transmit ProSe Direct Discovery announcements:

- RSRP related side conditions given in Sections 9.1.2.1 and 9.1.2.2 and RSRQ related side conditions given in Clause 9.1.5.1 for a corresponding Band are fulfilled,
- SCH_RP and SCH Ês/Iot according to Annex B.2.1 for a corresponding Band are fulfilled.

8.10.2.2 Initiation/Cease of SLSS transmissions with ProSe Direct Communication

The requirements in this subclause are applicable to a UE capable of ProSe Direct Communication.

The requirements apply when the conditions for SLSS transmissions specified in [2] are met; networkControlledSyncTx is not configured; and syncTxThreshIC is included in SystemInformationBlockType18. The UE shall be capable of measuring the RSRP of the cell used to transmit Prose Direct Communication to evaluate to initiate/cease SLSS transmissions within $T_{evaluate.SLSS}$

where,

- $T_{\text{evaluate.SLSS}} = 0.4$ seconds when UE is not configured with DRX.
- T_{evaluate.SLSS} = as specified in Table 8.10.2.2-1 when UE is configured with DRX.

Table 8.10.2.2-1: Tevaluate.SLSS with ProSe Direct Communication

DRX cy	cle length [s]	T _{evaluate,SLSS} [s] (number of DRX cycles)
	≤0.04 0.4 (Note 1)	
0.04 <drx-cycle≤2.56 (6)<="" 2="" note="" td=""><td>Note 2 (6)</td></drx-cycle≤2.56>		Note 2 (6)
Note1:	Number of DRX cycles depends upon the	
	DRX cycle in use	
Note2:	Time depends upon the DRX cycles in use	

If higher layer filtering is configured, an additional delay in evaluation to initiate/cease SLSS transmissions can be expected.

For the cell used to transmit ProSe Direct Communication:

- RSRP related side conditions given in Sections 9.1.2.1 and 9.1.2.2 and RSRQ related side conditions given in Clause 9.1.5.1 for a corresponding Band are fulfilled,
- SCH_RP and SCH Es/Iot according to Annex B.2.1 for a corresponding Band are fulfilled.

8.11 Discovery Signal Measurements under Operation with Frame Structure 3

8.11.1 Introduction

This section contains requirements on the UE for measurement reporting in RRC_CONNECTED state when discovery signal [16] is configured. The requirements are specified for E-UTRA CRS based discovery signal measurements and CSI-RS based discovery signal measurements.

The requirements in Section 8.11.2 shall apply for CRS based discovery signal measurements comprising RSRP and RSRQ measurements [4]. The requirements in Section 8.11.3 shall apply for CSI-RS based discovery signal measurements comprising CSI-RSRP measurements [4].

The measurement quantities are defined in [4], the measurement model is defined in [22] and measurement accuracy requirements are specified in Section 9. Control of measurement reporting is specified in TS 36.331 [2].

The requirements in this Section shall apply for carrier with E-UTRA operation following the frame structure type 3 [16].

The requirements in Section 9 are applicable for a UE performing measurements according to Section 8.11.

8.11.2 CRS based discovery signal measurements

8.11.2.1 E-UTRAN intra-frequency measurements

NOTE: The requirements in this section are applicable only for measurements on SCC following the frame structure type 3 [16].

The UE shall be able to identify new intra-frequency FS3 cells and perform measurements of identified intra-frequency cells without an explicit intra-frequency neighbour cell list containing physical layer cell identities. During the RRC_CONNECTED state the UE shall continuously measure identified intra-frequency cells and additionally search for and identify new intra-frequency cells.

8.11.2.1.1 Requirements

8.11.2.1.1.1 Requirements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable FS3 intra-frequency cell within T_{identify intra} SCE₂

 $T_{identify_intra_FS3} = T_{detect\ intra_FS3} + T_{measure\ intra_FS3_CRS}$

where:

T_{detect intra_FS3} is the intra-frequency period for cell detection as specified in Table 8.11.2.1.1.1-1,

 $T_{measure_intra_FS3_CRS}$ is the intra-frequency period for measurements as shown in Table 8.11.2.1.1.1-2,

T_{DMTC periodicity} is the discovery signal measurement timing configuration periodicity of higher layer,

L is the number of configured discovery signal occasions which are not available during $T_{\text{detect intra_FS3}}$ for cell detection at the UE due to the absence of the necessary radio signals,

M is the number of configured discovery signal occasions which are not available during $T_{measure_intra_FS3_CRS}$ for the measurements at the UE due to the absence of the necessary radio signals.

Table 8.11.2.1.1.1-1: Intra-frequency cell detection under operation with frame structure 3

SCH Ês/lot	T _{detect intra_FS3} , [ms]
[0] ≤ SCH Ês/lot	([1]+L) * T _{DMTC_periodicity}
[-6] ≤ SCH Ês/lot < [0]	([4]+L) * T _{DMTC_periodicity}

A cell shall be considered detectable when

- RSRP related side conditions given in Section TBD are fulfilled for a corresponding Band,
- RSRQ related side conditions given in Section TBD are fulfilled for a corresponding Band,
- SCH_RP is according to Annex B.2.x for a corresponding Band and SCH Ês/Iot is according to Table 8.11.2.1.1.1-1.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{measure_intra_FS3_CRS}$ when no DRX is used. If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra-frequency measurements is $T_{measure_intra_FS3_CRS}$ as shown in Table 8.11.2.1.1.1-2, when no DRX is in use. The UE shall be capable of performing RSRP and RSRQ measurements for 3 identified intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers within the measurement period of $T_{measure_intra_FS3_CRS}$.

Table 8.11.2.1.1.1-2: Intra-frequency measurement requirements under operation with frame structure 3

Measurement bandwidth [RB]	CRS Ês/lot	Discovery signal occasion duration (ds- OccasionDuration) [ms]	T _{measure_intra_FS3_CRS} [ms]
≥6	[0] ≤ CRS Ês/lot	1	([3]+M) * T _{DMTC_periodicity}
≥6	[-6] ≤ CRS Ês/lot < [0]	1	([5]+M) * T _{DMTC_periodicity}
≥25	[0] ≤ CRS Ês/lot	1	([1]+M) * T _{DMTC_periodicity}
≥ 25	[-6] ≤ CRS Ês/lot < [0]	1	([3]+M) * T _{DMTC periodicity}

The RSRP measurement accuracy for all measured cells shall be as specified in Section TBD, and the RSRQ measurement accuracy for all measured cells shall be as specified in Section TBD.

8.11.2.1.1.1.1 Measurement Reporting Requirements

8.11.2.1.1.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in Sections TBD and TBD, respectively.

8.11.2.1.1.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in Sections TBD and TBD, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in Section 8.11.2.1.1.1.3.

8.11.2.1.1.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in Sections TBD and TBD, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_intra_FS3}$ defined in Section 8.11.2.1.1.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_FS3}$ defined in Section 8.11.2.1.1.1 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_intra_FS3_CRS}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.11.2.1.1.2 Requirements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable FS3 intra-frequency cell within $T_{identify_intra_FS3_DRX}$.

 $T_{identify\ intra\ FS3\ DRX} = T_{detect\ intra\ FS3\ DRX} + T_{measure\ intra\ FS3\ CRS\ DRX},$

where:

T_{detect intra FS3 DRX} is the intra-frequency period for cell detection as shown in Table 8.11.2.1.1.2-1,

 $T_{measure_intra_FS3_CRS_DRX} \ is \ the \ intra-frequency \ period \ for \ measurements \ as \ shown \ in \ Table \ 8.11.2.1.1.2-2,$

 $T_{DMTC_periodicity}$ is the discovery signal measurement timing configuration periodicity of higher layer,

L is the number of configured discovery signal occasions during ON DURATION and which are not available during $T_{\text{detect intra_FS3_DRX}}$ for cell detection at the UE due to the absence of the necessary radio signals,

M is the number of configured discovery signal occasions during ON DURATION and which are not available during $T_{measure\ intra\ FS3\ CRS\ DRX}$ for the measurements at the UE due to the absence of the necessary radio signals.

Table 8.11.2.1.1.2-1: Intra-frequency cell detection under operation with frame structure 3

SCH Ês/lot	T _{detect intra_FS3_CRS_DRX} , [ms]
[0] ≤ SCH Ês/lot	(TBD+L) * Max{ T _{DMTC_periodicity} , DRX cycle length }
[-6] ≤ SCH Ês/lot < [0]	(TBD+L) * Max{ T _{DMTC_periodicity} , DRX cycle length }

A cell shall be considered detectable when

- RSRP related side conditions given in Section TBD are fulfilled for a corresponding Band,
- RSRQ related side conditions given in Section TBD are fulfilled for a corresponding Band,
- SCH_RP is according to Annex B.2.x for a corresponding Band and SCH Ês/Iot is according to Table 8.11.2.1.1.2-1.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{measure_intra_FS3_CRS_DRX}$ when DRX is used. If higher layer filtering is used, an additional cell identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra-frequency measurements is $T_{measure_intra_FS3_CRS_DRX}$ as shown in Table 8.11.2.1.1.2-2, when DRX is in use. The UE shall be capable of p performing RSRP and RSRQ measurements for 3 identified intra-frequency cells, and the UE physical layer shall be capable of reporting measurements to higher layers within the measurement period of $T_{measure_intra_FS3_CRS_DRX}$.

Table 8.11.2.1.1.2-2: Intra-frequency measurement requirements under operation with frame structure 3

Measurement bandwidth [RB]	CRS Ês/lot	Discovery signal occasion duration (<i>ds-OccasionDuration</i>) [ms]	T _{measure_intra_FS3_CRS_DRX} , [ms]
≥6	[0] ≤ CRS Ês/lot	1	([3]+M) * Max{ T _{DMTC_periodicity} , DRX cycle length }
≥6	[-6] ≤ CRS Ês/lot < [0]	1	([5]+M) * Max{ T _{DMTC_periodicity} , DRX cycle length }
≥25	[0] ≤ CRS Ês/lot	1	([1]+M) * Max{ T _{DMTC_periodicity} , DRX cycle length }
≥25	[-6] ≤ CRS Ês/lot < [0]	1	([3]+M) * Max{ T _{DMTC_periodicity} , DRX cycle length }

The RSRP measurement accuracy for all measured cells shall be as specified in Section TBD, and the RSRQ measurement accuracy for all measured cells shall be as specified in Section TBD.

8.11.2.1.1.2.1 Measurement Reporting Requirements

8.11.2.1.1.2.1.1 Periodic Reporting

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in Sections TBD and TBD, respectively.

8.11.2.1.1.2.1.2 Event-triggered Periodic Reporting

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in Sections TBD and TBD, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in Section 8.11.2.1.1.2.1.3.

8.11.2.1.1.2.1.3 Event Triggered Reporting

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in Sections TBD and TBD, respectively.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_intra_FS3_DRX}$ defined in Section 8.11.2.1.1.2. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_intra_FS3_DRX}$ defined in Section 8.11.2.1.1.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measuer_intra_FS3_CRS_DRX}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.11.2.2 E-UTRAN inter-frequency measurements

Editor's note: the requirements are TBD.

8.11.3 CSI-RS based discovery signal measurements

8.11.3.1 E-UTRAN intra-frequency measurements

The UE shall be able to identify new intra-frequency FS3 TPs and perform CSI-RSRP measurements of intra-frequency TPs with an explicit intra-frequency TP list containing physical layer cell identities. During the RRC_CONNECTED state the UE shall continuously measure identified intra-frequency TPs and additionally search for and identify new intra-frequency TPs.

8.11.3.1.1 Requirements

8.11.3.1.1.1 Requirements when no DRX is used

When no DRX is in use the UE shall be able to identify a new detectable FS3 intra-frequency TP within $T_{identify_intra_TP_FS3}$.

 $T_{identify_intra_TP_FS3} = T_{identify_intra_FS3} + T_{measure_intra_FS3_CSI-RS},$

where

T_{identify intra FS3} is the intra-frequency period for cell identification in Section 8.11.2.1.1.1,

 $T_{measure_intra_FS3_CSI-RS}$ is the intra-frequency period for TP measurement as shown in Table 8.11.3.1.1.1-1,

 $T_{DMTC_periodicity}$ is the discovery signal measurement timing configuration periodicity of higher layer,

M is the number of configured discovery signal occasions which are not available during $T_{measure_intra_FS3_CSI-RS}$ for the measurements at the UE due to the absence of the necessary radio signals.

A TP shall be considered detectable when

- CSI-RSRP related side conditions given in Section TBD are fulfilled for a corresponding Band,

- SCH_RP is according to Annex B.2.x for a corresponding Band and SCH £s/Iot is according to Section 8.11.2.1.1.1.

Identification of a TP shall include identification of the cell and additionally performing a single measurement on the TP within the measurement period of $T_{measure_intra_FS3_CSI-RS}$ when no DRX is used. If higher layer filtering is used, an additional TP identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra-frequency measurements is $T_{measure_intra_FS3_CSI-RS}$ as shown in table 8.11.3.1.1.1-1, when no DRX is in use. The UE shall be capable of performing CSI-RSRP measurements for 3 identified intra-frequency TPs, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_intra_FS3_CSI-RS}$

Table 8.11.3.1.1.1-1: Intra-frequency TP measurement requirements under operation with frame structure 3

Measurement bandwidth [RB]	CSI-RS Ês/lot	Discovery signal occasion duration (ds- OccasionDuration) [ms]	T _{measure_intra_FS3_CSI-RS,} [ms]
≥6	[0] ≤ CSI-RS Ês/lot	1	([3]+M) * T _{DMTC_periodicity}
≥6	[-6] ≤ CSI-RS Ês/lot < [0]	1	([5]+M) * T _{DMTC_periodicity}
≥25	[0] ≤ CSI-RS Ês/lot	1	([1]+M) * T _{DMTC_periodicity}
≥ 25	[-6] ≤ CSI-RS Ês/lot < [0]	1	([3]+M) * T _{DMTC_periodicity}

The CSI-RSRP measurement accuracy for all measured TPs shall be as specified in Section TBD.

8.11.3.1.1.1 Measurement Reporting Requirements

8.11.3.1.1.1.1 Periodic Reporting

Reported CSI-RSRP measurements contained in periodically triggered measurement reports shall meet the requirements in Section TBD.

8.11.3.1.1.1.2 Event-triggered Periodic Reporting

Reported CSI-RSRP measurements contained in event triggered periodic measurement reports shall meet the requirements in Section TBD.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in Section 8.11.3.1.1.1.3.

8.11.3.1.1.1.3 Event Triggered Reporting

Reported CSI-RSRP measurements contained in event triggered measurement reports shall meet the requirements in Section TBD.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_intra_TP_FS3}$ defined in Section 8.11.3.1.1.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a TP which has been detectable at least for the time period $T_{identify_intra_TP_FS3}$ defined in Section 8.11.3.1.1.1 becomes undetectable for a period ≤ 5 seconds and then the TP becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_intra_FS3_CSI-RS}$ provided the timing to that TP has not

changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.11.3.1.1.2 Requirements when DRX is used

When DRX is in use the UE shall be able to identify a new detectable FS3 intra-frequency TP within $T_{identify_intra_TP_FS3_DRX}$.

 $T_{identify_intra_TP_FS3_DRX} = T_{identify_intra_FS3_DRX} + T_{measure_intra_FS3_CSI-RS_DRX},$

where:

 $T_{identify_intra_FS3_DRX}$ is the intra-frequency period for cell identification in Section 8.11.2.1.1.2.

 $T_{measure\ intra\ FS3\ CSI-RS\ DRX}$ is the intra-frequency period for TP measurement as shown in Table 8.11.3.1.1.2-1, where

 $T_{DMTC_periodicity}$ is the discovery signal measurement timing configuration periodicity of higher layer,

M is the number of configured discovery signal occasions during ON DURATION and which are not available duting $T_{measure_intra_FS3_CSI-RS_DRX}$ for the measurements at the UE due to the absence of the necessary radio signals.

A TP shall be considered detectable when

- CSI-RSRP related side conditions given in Section TBD are fulfilled for a corresponding Band,
- SCH_RP is according to Annex B.2.x for a corresponding Band and SCH £s/Iot is according to Section 8.11.2.1.1.2.

Identification of a TP shall include identification of the cell and additionally performing a single measurement on the TP within measurement period of $T_{measure_intra_FS3_CSI-RS_DRX}$ when DRX is used. If higher layer filtering is used, an additional TP identification delay can be expected.

In the RRC_CONNECTED state the measurement period for intra frequency measurements is $T_{measure_intra_FS3_CSI-RS_DRX}$ as shown in Table 8.11.3.1.1.2-1, when DRX is in use. The UE shall be capable of performing CSI-RSRP measurements for 3 identified intra-frequency TPs, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_intra_FS3_CSI-RS_DRX}$.

Table 8.11.3.1.1.2-1: Intra-frequency TP measurement requirements under operation with frame structure 3

Measurement bandwidth [RB]	CSI-RS Ês/lot	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{measure_intra_FS3_CSI-RS_DRX} , [ms]
≥6	[0] ≤ CSI-RS Ês/lot	1	([3]+M) * Max{ T _{DMTC_periodicity} , DRX cycle length }
≥6	[-6]≤ CSI-RS Ês/lot<[0]	1	([5]+M) * Max{ T _{DMTC_periodicity} , DRX cycle length }
≥25	[0] ≤ CSI-RS Ês/lot	1	([1]+M) * Max{ T _{DMTC_periodicity} , DRX cycle length }
≥25	[-6]≤ CSI-RS Ês/lot<[0]	1	([3]+M) * Max{ T _{DMTC_periodicity} , DRX cycle length }

The CSI-RSRP measurement accuracy for all measured TPs shall be as specified in Section TBD.

8.11.3.1.1.2.1 Measurement Reporting Requirements

8.11.3.1.1.2.1.1 Periodic Reporting

Reported CSI-RSRP measurements contained in periodically triggered measurement reports shall meet the requirements in Section TBD.

8.11.3.1.1.2.1.2 Event-triggered Periodic Reporting

Reported CSI-RSRP measurements contained in event triggered periodic measurement reports shall meet the requirements in Section TBD.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in Section 8.11.3.1.1.2.1.3.

8.11.3.1.1.2.1.3 Event Triggered Reporting

Reported CSI-RSRP measurements contained in event triggered measurement reports shall meet the requirements in Section TBD.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_intra_TP_FS3_DRX}$ defined in Section 8.11.3.1.1.2. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a TP which has been detectable at least for the time period $T_{identify_intra_TP_FS3_DRX}$ defined in Section 8.11.3.1.1.2 becomes undetectable for a period ≤ 5 seconds and then the TP becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_intra_FS3_CSI_RS_DRX}$ provided the timing to that TP has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used or IDC autonomous denial is configured, an additional delay can be expected.

8.11.3.2 E-UTRAN inter-frequency measurements

Editor's note: requirements are TBD.

8.11.4 RSSI measurements

8.11.4.1 E-UTRAN intra-frequency measurements

NOTE: The requirements in this section are applicable only for measurements on SCC following the frame structure type 3 [16].

The UE physical layer shall be capable of performing the RSSI measurements on one or more serving carriers, if the carrier(s) are indicated by higher layers [2], and reporting the RSSI measurements to higher layers.

Editor's note: Requirements are TBD.

8.11.4.2 E-UTRAN inter-frequency measurements

The UE physical layer shall be capable of performing the RSSI measurements on one or more serving carriers, if the carrier(s) are indicated by higher layers [2], and reporting the RSSI measurements to higher layers.

Editor's note: Requirements are TBD.

8.12 Discovery Signal Measurements for E-UTRA Carrier Aggregation under Operation with Frame Structure 3

8.12.1 Introduction

This section contains requirements on UE capabilities for support of E-UTRA carrier aggregation.

Non configured frequencies may be measured with measurement gaps according to the requirements in Section 8.11.2.2 and Section 8.11.3.2.

The requirements in Section 8.12 shall apply for E-UTRA carrier aggregation of one FDD PCell or one TDD PCell and SCells one one or more SCCs, where all SCCs are following the frame structure type 3 [16].

8.12.2 CRS based discovery signal measurements for E-UTRA carrier aggregation

8.12.2.1 Introduction

The requirements in Section 8.12.2 shall apply for CRS based discovery signal measurements comprising RSRP and RSRQ measurements [4].

8.12.2.2 Measurements of a secondary component carrier

A secondary component carrier may be activated and deactivated by MAC-CE commands as specified in [17]. The applicable performance requirements depend on whether the SCell on the corresponding frequency is actived or deactivated.

8.12.2.3 Measurements of a secondary component carrier with active SCell

When the SCell is activated, measurement performance requirements for the frequency are those given in Section 8.11.2.1. If common DRX is in use, then the requirements for that secondary component carrier are given by the DRX requirements in Section 8.11.2.1.1.2, otherwise the non-DRX requirements are applicable. The applicable measurement accuracy requirements are in Section TBD.

8.12.2.4 Measurements of a secondary component carrier with deactivated SCell

This section defines the measurement requirements of a secondary component carrier with deactivated SCell based on the parameter *measCycleSCell* defined in TS 36.331 [2].

8.12.2.4.1 E-UTRAN secondary component carrier measurements when no common DRX is used

When no DRX is in use the UE shall be able to identify a new detectable cell on a secondary component carrier within $T_{identify_SCC_FS3}$, according to the parameter measCycleSCell.

 $T_{identify_SCC_FS3} = T_{detect_SCC_FS3} + T_{measure_SCC_FS3_CRS}$

where:

T_{detect SCC_ES3} is the time period for cell detection as specified in Table 8.12.2.4.1-1,

T_{measure SCC FS3 CRS} is the time period for measurements as shown in Table 8.12.2.4.1-2,

T_{DMTC periodicity} is the discovery signal measurement timing configuration periodicity of higher layer,

L is the number of configured discovery signal occasions which are not available during $T_{\text{detect SCC_FS3}}$ for cell detection at the UE due to the absence of the necessary radio signals,

M is the number of configured discovery signal occasions which are not available during $T_{measure_SCC_FS3_CRS}$ for the measurements at the UE due to the absence of the necessary radio signals.

Table 8.12.2.4.1-1: Intra-frequency cell detection on SCC under operation with frame structure 3 with deactivated SCell

SCH Ês/lot	T _{detect SCC_FS3} , [ms]
[0] ≤ SCH Ês/lot	([1]+L) * measCycleSCell
[-6] ≤ SCH Ês/lot < [0]	([5]+L) * measCycleSCell

A cell shall be considered detectable when

- RSRP related side condition given in Section TBD are fulfilled for a corresponding Band,
- $SCH_RP|_{dBm}$ is according to Annex B.2.x for a corresponding Band and SCH Ês/Iot is according to Table 8.12.2.4.1-1.

The measurement period for deactivated SCell measurements is $T_{measure_SCC_FS3_CRS}$ according to the parameter measCycleSCell shown in Table 8.12.2.4.1-1.

Table 8.12.2.4.1-2: Intra-frequency cell measurement requirements on SCC under operation with frame structure 3 with deactivated SCell

Measurement bandwidth [RB]	CRS Ës/lot	Discovery signal occasion duration (ds- OccasionDuration) [ms]	T _{measure_SCC_FS3_CRS} [ms]
≥6	[0] ≤ CRS Ês/lot	1	([3]+M) * measCycleSCell
≥6	[-6] ≤ CRS Ês/lot < [0]	1	([5]+M) * measCycleSCell
≥25	[0] ≤ CRS Ês/lot	1	([1]+M) * measCycleSCell
≥ 25	[-6] ≤ CRS Ês/lot < [0]	1	([3]+M) * measCycleSCell

The UE shall be capable of performing RSRP and RSRQ measurements for 3 identified cells on a secondary component carrier, and the UE physical layer shall be capable of reporting measurements to higher layers within the measurement period of $T_{measure_SCC_FS3_CRS}$.

The measurement accuracy for all measured cells shall be as specified in Section TBD.

A UE may reconfigure the receiver bandwidth or turn on/off one of the RF chains when performing measurements on one or two SCCs with deactivated SCell. This may cause interruptions on PCell or an activated SCell that are specified in Section 7.8.

8.12.2.4.1.1 Measurement Reporting Requirements

8.12.2.4.1.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in Section 9.

8.12.2.4.1.1.2 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in Section 9.

The first report in event triggered periodic CRS based measurement reporting shall meet the requirements specified in Section 8.12.2.4.1.1.3.

8.12.2.4.1.1.3 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in Section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which is caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_SCC_FS3}$ defined in Section 8.12.2.4.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_SCC_FS3}$ defined in Section 8.12.2.4.1 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_SCC_FS3_CRS}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.12.2.4.2 E-UTRAN secondary component carrier measurements when common DRX is used

When DRX is in use the UE shall be able to identify a new detectable FS3 cell on a secondary component carrier within $T_{identify\ SCC\ FS3\ DRX}$, according to the parameter measCycleSCell.

 $T_{identify_SCC_FS3_DRX} = T_{detect_SCC_FS3_DRX} + T_{measure_SCC_FS3_CRS_DRX},$

where:

T_{detect SCC FS3 DRX} is the time period for cell detection as shown in Table 8.12.2.4.2-1,

T_{measure SCC FS3 CRS DRX} is the time period for measurements as shown in Table 8.12.2.4.2-2,

T_{DMTC periodicity} is the discovery signal measurement timing configuration periodicity of higher layer,

L is the number of configured discovery signal occasions during ON DURATION and which are not available during $T_{\text{detect SCC FS3 DRX}}$ for cell detection at the UE due to the absence of the necessary radio signals,

M is the number of configured discovery signal occasions during ON DURATION and which are not available during $T_{measure\ SCC\ FS3\ CRS\ DRX}$ for the measurements at the UE due to the absence of the necessary radio signals.

Table 8.12.2.4.2-1: Cell detection on SCC under operation with frame structure 3

SCH Ês/lot	T _{detect SCC_FS3_DRX} , [ms]	
[0] ≤ SCH Ês/lot	(TBD+L) * Max{ measCycleSCell, DRX cycle	
	length }	
[-6] ≤ SCH Ês/lot < [0]	(TBD +L) * Max{ measCycleSCell, DRX cycle	
	length }	

A cell shall be considered detectable when

- RSRP related side condition given in Section TBD are fulfilled for a corresponding Band,
- $SCH_RP|_{dBm}$ is according to Annex B.2.x for a corresponding Band and SCH $\hat{E}s/Iot$ is according to Table 8.12.2.4.2-1.

The measurement period for deactivated scell measurements is $T_{measure_scc_CRS_DRX}$ according to the parameter measCycleSCell shown in Table 8.12.2.4.2-2.

Table 8.12.2.4.2-2: Measurement requirements on SCC under operation with frame structure 3

Measurement bandwidth [RB]	CRS Ês/lot	Discovery signal occasion duration (ds- OccasionDuration) [ms]	T _{measure_SCC_FS3_CRS_DRX} , [ms]
≥6	[0] ≤ CRS Ês/lot	1	([3]+M) * <i>Max</i> { <i>measCycleSCell</i> , DRX cycle length }
≥6	[-6] ≤ CRS Ês/lot < [0]	1	([5]+M) * Max{ measCycleSCell, DRX cycle length }
≥25	[0] ≤ CRS Ês/lot	1	([1]+M) * Max{ measCycleSCell, DRX cycle length }
≥25	[-6] ≤ CRS Ês/lot < [0]	1	([3]+M) * Max{ measCycleSCell, DRX cycle length }

The UE shall be capable of performing RSRP and RSRQ measurements for 3 identified cells on a secondary component carrier, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{\text{measure SCC FS3 CRS DRX}}$.

The measurement accuracy for all measured cells shall be as specified in Section TBD.

A UE may reconfigure receiver bandwidth taking into account the SCell activation/deactivation status, and when making measurements of cells on one or two SCCs with deactivated SCell. This may cause interruptions (packet drops) to a PCell or an activated SCell. No interruptions while the On Duration timer is running shall be allowed when common DRX is used. The requirement considers only interruptions due to reconfiguration of the receiver bandwidth, and not due to other causes such as RF impairments or channel conditions.

8.12.2.4.2.1 Measurement Reporting Requirements

8.12.2.4.2.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in Section 9.

8.12.2.4.2.1.2 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in Section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in Section 8.12.2.4.2.1.3.

8.12.2.4.2.1.3 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in Section 9.

The UE shall not send any event triggered CRS based measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which is caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_scc_CRS}$ defined in Section 8.12.2.4.2. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify_scc_SCE_DRX}$ defined in Section 8.12.2.4.2 becomes undetectable for a period ≤ 5 seconds and then the cell becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_scc_CRS_DRX}$ provided the timing to that cell has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.12.3 Requirements for CSI-RS based discovery signal measurements for E-UTRA carrier aggregation

8.12.3.1 Introduction

The requirements in Section 8.12.3 shall apply for CSI-RS based discovery signal measurements comprising CSI-RSRP measurements [4].

8.12.3.2 Measurements of a secondary component carrier

A Secondary component carrier may be activated and deactivated by MAC-CE commands as specified in [17]. The applicable performance requirements depend on whether the SCell on the corresponding frequency is actived or deactivated.

8.12.3.3 Measurements of a secondary component carrier with active SCell

When the SCell is activated, measurement performance requirements for the frequency are those given in Section 8.11.3.1. If common DRX is in use, then the requirements for that secondary component carrier are given by the DRX requirements in Section 8.11.3.1.1.2, otherwise the non DRX requirements are applicable. The applicable measurement accuracy requirements are in Section TBD.

8.12.3.4 Measurements of a secondary component carrier with deactivated SCell

This section defines the measurement requirements of a secondary component carrier with deactivated SCell based on the parameter *measCycleSCell* defined in TS 36.331 [2].

8.12.3.4.1 E-UTRAN secondary component carrier measurements when no common DRX is used

When no DRX is in use the UE shall be able to identify a new detectable FS3 TP on a secondary component carrier within T_{identify SCC TP FS3}, according to the parameter *measCycleSCell*.

 $T_{identify_SCC_TP_FS3} = T_{identify_SCC_FS3} + T_{measure_SCC_FS3_CSI-RS}$

where:

 $T_{identify\ SCC\ FS3}$ is the time period for cell identification in Section 8.12.2.4.1,

T_{measure SCC FS3 CSI-RS} is the time period for TP measurement in Table 8.12.3.4.1-1,

M is the number of configured discovery signal occasions which are not available for the measurements at the UE during $T_{measure_SCC_FS3_CSI-RS}$ due to the absence of the necessary radio signals.

Table 8.12.3.4.1-1: Measurement requirements for a TP on SCC under operation with frame structure 3

Measurement bandwidth [RB]	CSI-RS Ês/lot	Discovery signal occasion duration (ds- OccasionDuration) [ms]	T _{measure_SCC_FS3_CSI-RS} [ms]
≥6	[0] ≤ CSI-RS Ês/lot	1	([3]+M) * measCycleSCell
≥6	[-6] ≤ CSI-RS Ês/lot < [0]	1	([5]+M) * measCycleSCell
≥25	[0] ≤ CSI-RS Ês/lot	1	([1]+M) * measCycleSCell
≥25	[-6] ≤ CSI-RS Ês/lot < [0]	1	([3]+M) * measCycleSCell

A cell shall be considered detectable when

- CSI-RSRP related side condition given in Section TBD are fulfilled for a corresponding Band,
- SCH_RP|_{dBm} is according to Annex B.2.(x+1) for a corresponding Band and SCH Ês/Iot is according to Table 8.12.2.4.1-1.

The UE shall be capable of performing RSRP measurements for 3 identified TPs on a secondary component carrier, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{measure_SCC_FS3_CSI-RS}$.

The measurement accuracy for all measured TPs shall be as specified in Section TBD.

A UE may reconfigure the receiver bandwidth or turn on/off one of the RF chains when performing measurements on one or two SCCs with deactivated SCell. This may cause interruptions on PCell or an activated SCell that are specified in Section 7.8.

8.12.3.4.1.1 Measurement Reporting Requirements

8.12.3.4.1.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in Section 9.

8.12.3.4.1.1.2 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in Section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in Section 8.12.3.4.1.1.3.

8.12.3.4.1.1.3 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in Section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which is caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_SCC_TP_FS3}$ defined in Section 8.12.3.4.1. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a TP which has been detectable at least for the time period $T_{identify_SCC_TP_FS3}$ defined in Section 8.12.3.4.1 becomes undetectable for a period ≤ 5 seconds and then the TP becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_SCC_FS3_CSI-RS}$ provided the timing to that TP has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

8.12.3.4.2 E-UTRAN secondary component carrier measurements when common DRX is used

When DRX is in use the UE shall be able to identify a new detectable FS3 TP on a secondary component carrier within $T_{identify\ SCC\ TP\ FS3\ DRX}$, according to the parameter *measCycleSCell*.

 $T_{identify_SCC_TP_FS3_DRX} = T_{identify_SCC_FS3_DRX} + T_{measure_SCC_FS3_CSI-RS_DRX},$

where:

 $T_{identify_SCC_FS3_DRX}$ is the time period for cell identification in Section 8.12.2.4.2,

 $T_{measure_SCC_FS3_CSI-RS_DRX}$ is the time period for TP measurement in Table 8.12.3.4.2-1,

M is the number of configured discovery signal occasions during ON DURATION and which are not available during $T_{measure_SCC_FS3_CSI-RS_DRX}$ for the measurements at the UE due to the absence of the necessary radio signals.

Table 8.12.3.4.2-1: Measurement requirements for a TP on SCC under operation with frame structure 3

Measurement bandwidth [RB]	CSI-RS Ês/lot	Discovery signal occasion duration (ds-OccasionDuration) [ms]	T _{measure_SCC_FS3_CSI-RS_DRX} , [ms]
≥6	[0] ≤ CSI-RS Ês/lot	1	([3]+M) * Max{ measCycleSCell, DRX cycle length }
≥6	[-6] ≤ CSI-RS Ês/lot < [0]	1	([5]+M) * Max{ measCycleSCell, DRX cycle length }
≥25	[0] ≤ CSI-RS Ês/lot	1	([1]+M) * Max{ measCycleSCell, DRX cycle length }
≥25	[-6] ≤ CSI-RS Ês/lot < [0]	1	([3]+M) * Max{ measCycleSCell, DRX cycle length }

A cell shall be considered detectable when

- CSI-RSRP related side condition given in Section TBD are fulfilled for a corresponding Band,
- SCH_RP|_{dBm} is according to Annex B.2.(x+1) for a corresponding Band and SCH Ês/Iot is according to Table 8.12.2.4.2-1.

The UE shall be capable of performing CSI-RSRP measurements for 3 identified TPs on a secondary component carrier, and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period of $T_{\text{measure_SCC_FS3_CSI-RS_DRX}}$.

The measurement accuracy for all measured TPs shall be as specified in Section TBD.

A UE may reconfigure receiver bandwidth taking into account the SCell activation/deactivation status, and when making measurements of TPs on one or two SCCs with deactivated SCell. This may cause interruptions (packet drops) to a PCell or an activated SCell. No interruptions while the On Duration timer is running shall be allowed when common DRX is used. The requirement considers only interruptions due to reconfiguration of the receiver bandwidth, and not due to other causes such as RF impairments or channel conditions.

8.12.3.4.2.1 Measurement Reporting Requirements

8.12.3.4.2.1.1 Periodic Reporting

Reported measurements contained in periodically triggered measurement reports shall meet the requirements in Section 9.

8.12.3.4.2.1.2 Event-triggered Periodic Reporting

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in Section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in Section 8.12.3.4.2.1.3.

8.12.3.4.2.1.3 Event Triggered Reporting

Reported measurements contained in event triggered measurement reports shall meet the requirements in Section 9.

The UE shall not send any event triggered measurement reports, as long as no reporting criteria are fulfilled.

The measurement reporting delay is defined as the time between an event that will trigger a measurement report and the point when the UE starts to transmit the measurement report over the air interface. This requirement assumes that the measurement report is not delayed by other RRC signalling on the DCCH. This measurement reporting delay excludes a delay uncertainty resulted when inserting the measurement report to the TTI of the uplink DCCH. The delay uncertainty is: $2 \times TTI_{DCCH}$. This measurement reporting delay excludes a delay which is caused by no UL resources for UE to send the measurement report.

The event triggered measurement reporting delay, measured without L3 filtering shall be less than $T_{identify_SCC_TP_FS3_DRX}$ defined in Section 8.12.3.4.2. When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

If a TP which has been detectable at least for the time period $T_{identify_SCC_TP_FS3_DRX}$ defined in Section 8.12.3.4.2 becomes undetectable for a period ≤ 5 seconds and then the TP becomes detectable again and triggers an event, the event triggered measurement reporting delay shall be less than $T_{measure_SCC_FS3_CSI_RS_DRX}$ provided the timing to that TP has not changed more than \pm 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

9 Measurements performance requirements for UE

One of the key services provided by the physical layer is the measurements used to trigger or perform a multitude of functions. Both the UE and the E-UTRAN are required to perform measurements. The physical layer measurement model and a complete list of measurements are specified in [25] and [22] respectively. The physical layer measurements are described and defined in [4]. In this clause for each measurement the relevant requirements on the measurement period, reporting range, granularity and performance in terms of accuracy are specified.

Since the UE reference sensitivity requirements are different depending on supported band, this is noted in each case with definition of the range Io for each frequency band. Definitions of each frequency bands can be found in [5].

Except for requirements in sections 9.1.2A, 9.1.3A, 9.1.5A and 9.1.6A, the accuracy requirements in this clause are applicable for AWGN radio propagation conditions and assume independent interference (noise) at each receiver antenna port.

9.1 E-UTRAN measurements

9.1.1 Introduction

The requirements in this clause are applicable for a UE:

- in state RRC_CONNECTED
- performing measurements with appropriate measurement gaps as defined in Clause 8.1.2.1.
- that is synchronised to the cell that is measured.

The reported measurement result after layer 1 filtering shall be an estimate of the average value of the measured quantity over the measurement period. The reference point for the measurement result after layer 1 filtering is referred to as point B in the measurement model described in [25].

The accuracy requirements in this clause are valid for the reported measurement result after layer 1 filtering. The accuracy requirements are verified from the measurement report at point D in the measurement model having the higher layer filtering disabled.

In the requirements of Section 9 for the UE capable of CA and the UEs configured with up to four downlink SCell(s), the applicable exceptions for side conditions are specified in Annex B, Sections B.4.2 and B.4.3, respectively.

9.1.2 Intra-frequency RSRP Accuracy Requirements

9.1.2.1 Absolute RSRP Accuracy

The requirements for absolute accuracy of RSRP in this clause apply to a cell on the same frequency as that of the serving cell.

The accuracy requirements in Table 9.1.2.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP|dBm according to Annex B.3.1 for a corresponding Band

Table 9.1.2.1-1: RSRP Intra frequency absolute accuracy

Accuracy			Conditions						
Normal	Extreme		lo Note 1 range						
condition	condition	Ês/lot	E-UTRA operating band groups Note 3	Minin	num lo	Maximum lo			
dB	dB	dB		dBm/15kHz Note 2	dBm/BW _{Channel}	dBm/BW _{Channel}			
			FDD_A, TDD_A	-121	N/A	-70			
			FDD_B	-120.5	N/A	-70			
			FDD_C, TDD_C	-120	N/A	-70			
			FDD_D	-119.5	N/A	-70			
±4.5	±9	≥-6 dB	FDD_E, TDD_E	-119	N/A	-70			
			FDD_F	-118.5	N/A	-70			
			FDD_G	-118	N/A	-70			
			FDD_H	-117.5	N/A	-70			
			FDD_N	-114.5	N/A	-70			
±8	±11	≥-6 dB	FDD_A, TDD_A, FDD B, FDD_C, TDD_C, FDD_D, FDD_E, TDD_E, FDD_F, FDD_G, FDD_H, FDD_N	N/A	-70	-50			

NOTE 1: Io is assumed to have constant EPRE across the bandwidth.

NOTE 2: The condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

9.1.2.2 Relative Accuracy of RSRP

The relative accuracy of RSRP is defined as the RSRP measured from one cell compared to the RSRP measured from another cell on the same frequency.

The accuracy requirements in Table 9.1.2.2-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP1,2_{dBm} according to Annex B.3.8 for a corresponding Band.

Table 9.1.2.2-1: RSRP Intra frequency relative accuracy

Accı	ıracy	Conditions					
Normal	Extreme	Ês/lot Note	lo ^{Note 1} range				
condition	condition	2	E-UTRA operating band groups	Minimum Io	Maximum lo		
dB	dB	dB		dBm/15kHz Note 4	dBm/BW _{Channel}		
			FDD_A, TDD_A	-121	-50		
			FDD_B	-120.5	-50		
			FDD_C, TDD_C	-120	-50		
			FDD_D	-119.5	-50		
±2	±3	≥-3 dB	FDD_E, TDD_E	-119	-50		
			FDD_F	-118.5	-50		
			FDD_G	-118	-50		
			FDD_H	-117.5	-50		
			FDD_N	-114.5	-50		
±3	±3	≥-6 dB	Note 3	Note 3	Note 3		

NOTE 1: Io is assumed to have constant EPRE across the bandwidth.

NOTE 2: The parameter Ês/lot is the minimum Ês/lot of the pair of cells to which the requirement applies.

NOTE 3: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.

NOTE 4: The condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 5: E-UTRA operating band groups are as defined in Section 3.5.

9.1.2.3 Absolute RSRP Accuracy under Time Domain Measurement Resource Restriction

The requirements for absolute accuracy of RSRP in this clause shall apply to a cell on the same frequency as that of the serving cell when a time domain measurement resource restriction pattern for performing RSRP measurements on this cell is configured by higher layers (TS 36.331 [2]).

The accuracy requirements in Table 9.1.2.3-1 are valid under the following conditions:

Cell specific reference signals in the measured cell are transmitted either from one, two or four antenna ports,

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled,

RSRP_{dBm} according to Annex B.3.9 for a corresponding Band,

The time domain measurement resource restriction pattern configured for the measured cell indicates at least one subframe per radio frame for performing the RSRP measurement,

Four symbols containing CRS are available in all subframes indicated by the time domain measurement resource restriction pattern.

Table 9.1.2.3-1: RSRP Intra frequency absolute accuracy under time domain measurement resource restriction

Accı	uracy		C	onditions			
Normal	Extreme		lo ^{Note 2} range				
condition	condition	Ês/lot	E-UTRA operating band groups ^{Note 4}	Minim	num lo	Maximum Io	
dB	dB	dB		${ m dBm/} \ { m 15kHz}^{ m Note~1,3}$	dBm/BW _{Channel}	dBm/BW _{Channel}	
			FDD_A, TDD_A	-121	N/A	-70	
			FDD_B	-120.5	N/A	-70	
			FDD_C, TDD_C	-120	N/A	-70	
			FDD_D	-119.5	N/A	-70	
±4.5	±9	≥-4 dB	FDD_E, TDD_E	-119	N/A	-70	
			FDD_F	-118.5	N/A	-70	
			FDD_G	-118	N/A	-70	
			FDD_H	-117.5	N/A	-70	
			FDD_N	-114.5	N/A	-70	
±8	±11	≥-4 dB	FDD_A, TDD_A, FDD B, FDD_C, TDD_C, FDD_D, FDD_E, TDD_E, FDD_F, FDD_G, FDD_H, FDD_N	N/A	-70	-50	

NOTE 1: This minimum lo condition is expressed as the average lo per RE over all REs in that symbol.

NOTE 2: Io is defined in subframes indicated by the time domain measurement resource restriction pattern configured for performing RSRP measurements of this cell. The lo range defined by the minimum and the maximum lo levels applies to CRS and non-CRS symbols. Io may be different in different symbols within a subframe.

NOTE 3: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 4: E-UTRA operating band groups are as defined in Section 3.5.

For time domain measurements restriction under colliding CRS with ABS configured in non-MBSFN subframes, requirements in Section 9.1.2.1 apply.

9.1.2.4 Relative Accuracy of RSRP under Time Domain Measurement Resource Restriction

The requirements for relative accuracy of RSRP in this clause shall apply to a cell on the same frequency as that of the serving cell when a time domain measurement resource restriction pattern for performing RSRP measurements for this cell is configured by higher layers (TS 36.331 [2]).

The accuracy requirements in Table 9.1.2.4-1 are valid under the following conditions:

Cell specific reference signals in the measured cell are transmitted either from one, two or four antenna ports,

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled,

RSRP1,2|_{dBm} according to Annex B.3.10 for a corresponding Band,

The time domain measurement resource restriction pattern configured for the measured cell indicates at least one subframe per radio frame for performing the RSRP measurement,

Four symbols containing CRS are available in all subframes indicated by the time domain measurement resource restriction pattern.

Table 9.1.2.4-1: RSRP Intra frequency relative accuracy under time domain measurement resource restriction

Accı	ıracy	Conditions					
Normal	Extreme	Ês/lot Note	lo Note lo Note 3 range				
condition	condition	2	E-UTRA operating band groups Note 6 Minimum Io		Maximum Io		
dB	dB	dB		${ m dBm/}$ 15kHz $^{ m Note~1,5}$	dBm/BW _{Channel}		
			FDD_A, TDD_A	-121	-50		
			FDD_B	-120.5	-50		
			FDD_C, TDD_C	-120	-50		
			FDD_D	-119.5	-50		
±2	±3	≥-2 dB	FDD_E, TDD_E	-119	-50		
			FDD_F	-118.5	-50		
			FDD_G	-118	-50		
			FDD_H	-117.5	-50		
			FDD_N	-114.5	-50		
±3	±3	≥-4 dB	Note 4	Note 4	Note 4		

- NOTE 1: This minimum lo condition is expressed as the average lo per RE over all REs in that symbol.
- NOTE 2: The parameter Ês/lot is the minimum Ês/lot of the pair of cells to which the requirement applies.
- NOTE 3: Io is defined in subframes indicated by the time domain measurement resource restriction pattern configured for performing RSRP measurements of this cell. The Io range defined by the minimum and the maximum Io levels applies to CRS and non-CRS symbols. Io may be different in different symbols within a subframe.
- NOTE 4: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.
- NOTE 5: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.
- NOTE 6: E-UTRA operating band groups are as defined in Section 3.5.

For time domain measurements restriction under colliding CRS with ABS configured in non-MBSFN subframes, requirements in Section 9.1.2.2 apply.

9.1.2.5 Absolute RSRP Accuracy under Time Domain Measurement Resource Restriction with CRS assistance information

The requirements for absolute accuracy of RSRP in this clause shall apply to a cell on the same frequency as that of the serving cell when a time domain measurement resource restriction pattern for performing RSRP measurements on this cell is configured by higher layers (TS 36.331 [2]) and the CRS assistance information is provided. The requirements apply for UEs supporting CRS interference handling.

The accuracy requirements in Table 9.1.2.5-1 are valid under the following conditions:

Cell specific reference signals in the measured cell are transmitted either from one, two or four antenna ports,

Conditions defined in 36.101 Secion 7.3 for reference sensitivity are fulfilled,

RSRP_{dBm} according to Annex B.3.11 for a corresponding Band,

The time domain measurement resource restriction pattern configured for the measured cell indicates at least one subframe per radio frame for performing the RSRP measurement,

Four symbols containing CRS are available in all subframes indicated by the time domain measurement resource restriction pattern,

The UE is provided with the CRS assistance information (TS 36.331 [2]) and the CRS assistance information is valid throughout the entire evaluation period.

The requirements in this section shall also be met when the number of transmit antenna ports [16] of one or more cells whose CRS assistance information is provided [2] is different from the number of transmit antenna ports of the measured cell.

Table 9.1.2.5-1: RSRP Intra frequency absolute accuracy under Time Domain Measurement Resource
Restriction with CRS assistance information

Accı	uracy		Conditions					
Normal	Extreme	_	lo ^{Note 2} range					
condition	condition	Ês/lot	E-UTRA operating band groups ^{Note 4}	Minim	um lo	Maximum lo		
dB	dB	dB		dBm/15kHz Note	dBm/BW _{Channel}	dBm/BW _{Channel}		
			FDD_A, TDD_A	-121	N/A	-70		
			FDD_B	-120.5	N/A	-70		
			FDD_C, TDD_C	-120	N/A	-70		
			FDD_D	-119.5	N/A	-70		
±4.5	±9	≥-9.46	FDD_E, TDD_E	-119	N/A	-70		
			FDD_F	-118.5	N/A	-70		
			FDD_G	-118	N/A	-70		
			FDD_H	-117.5	N/A	-70		
			FDD_N	-114.5	N/A	-70		
±8	±11	≥-9.46	FDD_A, TDD_A, FDD B, FDD_C, TDD_C, FDD_D, FDD_E, TDD_E, FDD_F, FDD_G, FDD_H, FDD_N	N/A	-70	-50		

NOTE 1: This lo condition is expressed as the average lo per RE over all REs in an OFDM symbol.

NOTE 2: Io is defined in subframes indicated by the time domain measurement resource restriction pattern configured for performing RSRP measurements of this cell. The specified lo range applies to CRS and non-CRS symbols. Io may be different in different symbols within a subframe.

NOTE 3: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 4: E-UTRA operating band groups are as defined in Section 3.5.

9.1.2.6 Relative Accuracy of RSRP under Time Domain Measurement Resource Restriction with CRS assistance information

The requirements for relative accuracy of RSRP in this clause shall apply to a cell on the same frequency as that of the serving cell when a time domain measurement resource restriction pattern for performing RSRP measurements for this cell is configured by higher layers (TS 36.331 [2]) and the CRS assistance information is provided. The requirements apply for UEs supporting CRS interference handling.

The accuracy requirements in Table 9.1.2.6-1 are valid under the following conditions:

Cell specific reference signals in the measured cell are transmitted either from one, two or four antenna ports,

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled,

RSRP1,2|dBm according to Annex B.3.12 for a corresponding Band,

The time domain measurement resource restriction pattern configured for the measured cell indicates at least one subframe per radio frame for performing the RSRP measurement,

Four symbols containing CRS are available in all subframes indicated by the time domain measurement resource restriction pattern,

The UE is provided with the CRS assistance information (TS 36.331 [2]) and the CRS assistance information is valid throughout the entire evaluation period.

The requirements in this section shall also be met also when the number of transmit antenna ports [16] of one or more cells whose CRS assistance information is provided [2] is different from the number of transmit antenna ports of the measured cell.

Table 9.1.2.6-1: RSRP Intra frequency relative accuracy under Time Domain Measurement Resource
Restriction with CRS assistance information

Accı	ıracy	Conditions					
Normal	Extreme	Êc/lot Note	lo ^{Note 3} range				
condition	condition	Ês/lot Note	E-UTRA operating band groups ^{Note 7}	Minimum Io	Maximum lo		
dB	dB	dB		dBm/15kHz Note 1, 5	dBm/BW _{Channel}		
			FDD_A, TDD_A	-121	-50		
			FDD_B	-120.5	-50		
			FDD_C, TDD_C	-120	-50		
			FDD_D	-119.5	-50		
±2	±3	≥-6.96	FDD_E, TDD_E	-119	-50		
			FDD_F	-118.5	-50		
			FDD_G	-118	-50		
			FDD_H	-117.5	-50		
			FDD_N	-114.5	-50		
±3	±3	≥-9.46	Note 4	Note 4	Note 4		

- NOTE 1: This lo condition is expressed as the average lo per RE over all REs in an OFDM symbol.
- NOTE 2: The parameter £s/lot is the minimum £s/lot of the pair of cells to which the requirement applies.
- NOTE 3: Io is defined in subframes indicated by the time domain measurement resource restriction pattern configured for performing RSRP measurements of this cell. The specified Io range applies to CRS and non-CRS symbols. Io may be different in different symbols within a subframe.
- NOTE 4: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.
- NOTE 5: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.
- NOTE 6: The gap between the Es/lot level in table 9.1.2.6-1 and 9.1.2.4-1 is due to the interference from either PCell or at least one neighbour cell indicated within the CRS assistance information.
- NOTE 7: E-UTRA operating band groups are as defined in Section 3.5.

9.1.2A Intra-frequency RSRP Accuracy Requirements in High Doppler Conditions

The accuracy requirements in this clause are applicable for [EVA300 and EVA600] propagation conditions and assume independent interference (noise) at each receiver antenna port.

9.1.2A.1 Absolute RSRP Accuracy in high Doppler conditions

The requirements for absolute accuracy of RSRP in this clause apply to a cell on the same frequency as that of the serving cell.

The accuracy requirements in Table 9.1.2A.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP|dBm according to Annex B.3.1 for a corresponding Band

Table 9.1.2A1-1: RSRP Intra frequency absolute accuracy

Accı	ıracy		C	onditions			
Normal	Extreme		lo ^{Note 1} range				
condition	condition	Ês/lot	E-UTRA operating band groups Note 3	Minin	num lo	Maximum Io	
dB	dB	dB		dBm/15kHz Note 2	dBm/BW _{Channel}	dBm/BW _{Channel}	
			FDD_A, TDD_A	-121	N/A	-70	
		5 ≥-6 dB	FDD_B	-120.5	N/A	-70	
			FDD_C, TDD_C	-120	N/A	-70	
			FDD_D	-119.5	N/A	-70	
±6	±10.5		FDD_E, TDD_E	-119	N/A	-70	
			FDD_F	-118.5	N/A	-70	
			FDD_G	-118	N/A	-70	
			FDD_H	-117.5	N/A	-70	
			FDD_N	-114.5	N/A	-70	
±9.5	±12.5	≥-6 dB	FDD_A, TDD_A, FDD B, FDD_C, TDD_C, FDD_D, FDD_E, TDD_E, FDD_F, FDD_G, FDD_H, FDD_N	N/A	-70	-50	

NOTE 2: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

9.1.2A.2 Relative Accuracy of RSRP in high Doppler conditions

The relative accuracy of RSRP is defined as the RSRP measured from one cell compared to the RSRP measured from another cell on the same frequency.

The accuracy requirements in Table 9.1.2A.2-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP1,2|_{dBm} according to Annex B.3.8 for a corresponding Band.

Table 9.1.2A.2-1: RSRP Intra frequency relative accuracy

Accı	ıracy	Conditions					
Normal	Evtrome	Ês/lot Note	Io Note 1 range				
Normal condition	Extreme condition	ES/IOT	E-UTRA operating band groups Note 5	Minimum Io	Maximum lo		
dB	dB	dB		dBm/15kHz Note 4	dBm/BW _{Channel}		
			FDD_A, TDD_A	-121	-50		
			FDD_B	-120.5	-50		
			FDD_C, TDD_C	-120	-50		
			FDD_D	-119.5	-50		
±3.3	±4.3	≥-3 dB	FDD_E, TDD_E	-119	-50		
			FDD_F	-118.5	-50		
			FDD_G	-118	-50		
			FDD_H	-117.5	-50		
			FDD_N	-114.5	-50		
±4.3	±4.3	≥-6 dB	Note 3	Note 3	Note 3		

NOTE 1: Io is assumed to have constant EPRE across the bandwidth.

NOTE 2: The parameter Ês/lot is the minimum Ês/lot of the pair of cells to which the requirement applies.

NOTE 3: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.

NOTE 4: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 5: E-UTRA operating band groups are as defined in Section 3.5.

9.1.3 Inter-frequency RSRP Accuracy Requirements

9.1.3.1 Absolute RSRP Accuracy

The requirements for absolute accuracy of RSRP in this clause apply to a cell that has different carrier frequency from the serving cell.

The accuracy requirements in Table 9.1.3.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP|dBm according to Annex B.3.3 for a corresponding Band

Table 9.1.3.1-1: RSRP Inter frequency absolute accuracy

Accı	ıracy	Conditions					
Normal	Extreme	_	lo Note 1 range				
condition	condition	Ês/lot	E-UTRA operating band groups ^{Note 3}	Minim	um lo	Maximum lo	
dB	dB	dB		dBm/15kHz Note	dBm/BW _{Channel}	dBm/BW _{Channel}	
			FDD_A, TDD_A	-121	N/A	-70	
			FDD_B	-120.5	N/A	-70	
			FDD_C, TDD_C	-120	N/A	-70	
			FDD_D	-119.5	N/A	-70	
±4.5	±9	≥-6 dB	FDD_E, TDD_E	-119	N/A	-70	
			FDD_F	-118.5	N/A	-70	
			FDD_G	-118	N/A	-70	
			FDD_H	-117.5	N/A	-70	
			FDD_N	-114.5	N/A	-70	
±8	±11	≥-6 dB	FDD_A, TDD_A, FDD B, FDD_C, TDD_C, FDD_D, FDD_E, TDD_E, FDD_F, FDD_G, FDD_H, FDD_N	N/A	-70	-50	

NOTE 1: lo is assumed to have constant EPRE across the bandwidth.

NOTE 2: The condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

9.1.3.2 Relative Accuracy of RSRP

The relative accuracy of RSRP in inter frequency case is defined as the RSRP measured from one cell compared to the RSRP measured from another cell on a different frequency.

The accuracy requirements in Table 9.1.3.2-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

 $RSRP1,2|_{dBm}$ according to Annex B.3.4 for a corresponding Band

$$\left| RSRP1 \right|_{dBm} - RSRP2 \Big|_{dBm} \right| \le 27 dB$$

| Channel 1_Io -Channel 2_Io | ≤ 20 dB

Table 9.1.3.2-1: RSRP Inter frequency relative accuracy

Accı	ıracy	Conditions					
Normal	Evtromo	Ês/lot Note	lo Note 1 range				
condition	Extreme condition	ES/10t	E-UTRA operating band groups Note 4	Minimum Io	Maximum Io		
dB	dB	dB		dBm/15kHz Note 3	dBm/BW _{Channel}		
			FDD_A, TDD_A	-121	-50		
			FDD_B	-120.5	-50		
			FDD_C, TDD_C	-120	-50		
			FDD_D	-119.5	-50		
±4.5	±6	≥-6 dB	FDD_E, TDD_E	-119	-50		
			FDD_F	-118.5	-50		
			FDD_G	-118	-50		
			FDD_H	-117.5	-50		
			FDD_N	-114.5	-50		

NOTE 2: The parameter Ês/lot is the minimum Ês/lot of the pair of cells to which the requirement applies.

NOTE 3: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 4: E-UTRA operating band groups are as defined in Section 3.5.

9.1.3A Inter-frequency RSRP Accuracy Requirements in High Doppler Conditions

The accuracy requirements in this clause are applicable for [EVA300 and EVA600] propagation conditions and assume independent interference (noise) at each receiver antenna port.

9.1.3A.1 Absolute RSRP Accuracy in high Doppler conditions

The requirements for absolute accuracy of RSRP in this clause apply to a cell that has different carrier frequency from the serving cell.

The accuracy requirements in Table 9.1.3A.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP|dBm according to Annex B.3.3 for a corresponding Band

Table 9.1.3A.1-1: RSRP Inter frequency absolute accuracy

Accı	ıracy	Conditions					
Normal	Extreme	ا ، ا	lo ^{Note 1} range				
condition	condition	Ês/lot	E-UTRA operating band groups ^{Note 3}	Minim	um lo	Maximum lo	
dB	dB	dB		dBm/15kHz Note	dBm/BW _{Channel}	dBm/BW _{Channel}	
			FDD_A, TDD_A	-121	N/A	-70	
			FDD_B	-120.5	N/A	-70	
		≥-6 dB	FDD_C, TDD_C	-120	N/A	-70	
			FDD_D	-119.5	N/A	-70	
±6	±10.5		FDD_E, TDD_E	-119	N/A	-70	
			FDD_F	-118.5	N/A	-70	
			FDD_G	-118	N/A	-70	
			FDD_H	-117.5	N/A	-70	
			FDD_N	-114.5	N/A	-70	
±9.5	±12.5	≥-6 dB	FDD_A, TDD_A, FDD B, FDD_C, TDD_C, FDD_D, FDD_E, TDD_E, FDD_F, FDD_G, FDD_H, FDD_N	N/A	-70	-50	

NOTE 2: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

9.1.3A.2 Relative Accuracy of RSRP in high Doppler conditions

The relative accuracy of RSRP in inter frequency case is defined as the RSRP measured from one cell compared to the RSRP measured from another cell on a different frequency.

The accuracy requirements in Table 9.1.3A.2-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP1,2|dBm according to Annex B.3.4 for a corresponding Band

$$\left| RSRP1 \right|_{dBm} - RSRP2 \Big|_{dBm} \right| \le 27 dB$$

| Channel 1_Io -Channel 2_Io | \leq 20 dB

Table 9.1.3A.2-1: RSRP Inter frequency relative accuracy

Accuracy		Conditions				
Normal	Extreme	Ês/lot Note	lo Note 1 range			
condition	condition	2	E-UTRA operating band groups Note 4	Minimum Io	Maximum Io	
dB	dB	dB		dBm/15kHz Note 3	dBm/BW _{Channel}	
			FDD_A, TDD_A	-121	-50	
			FDD_B	-120.5	-50	
			FDD_C, TDD_C	-120	-50	
			FDD_D	-119.5	-50	
±5.8	±7.3	≥-6 dB	FDD_E, TDD_E	-119	-50	
			FDD_F	-118.5	-50	
			FDD_G	-118	-50	
			FDD_H	-117.5	-50	
			FDD_N	-114.5	-50	

NOTE 2: The parameter Ês/lot is the minimum Ês/lot of the pair of cells to which the requirement applies.

NOTE 3: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 4: E-UTRA operating band groups are as defined in Section 3.5.

9.1.4 RSRP Measurement Report Mapping

The reporting range of RSRP is defined from -140 dBm to -44 dBm with 1 dB resolution.

The mapping of measured quantity is defined in Table 9.1.4-1. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.1.4-1: RSRP measurement report mapping

Reported value	Measured quantity value	Unit
RSRP_00	RSRP < -140	dBm
RSRP_01	-140 ≤ RSRP < -139	dBm
RSRP_02	-139 ≤ RSRP < -138	dBm
•••		
RSRP_95	-46 ≤ RSRP < -45	dBm
RSRP_96	-45 ≤ RSRP < -44	dBm
RSRP_97	-44 ≤ RSRP	dBm

9.1.5 Intra-frequency RSRQ Accuracy Requirements

9.1.5.1 Absolute RSRQ Accuracy

The requirements for absolute accuracy of RSRQ in this clause apply to a cell on the same frequency as that of the serving cell.

The accuracy requirements in Table 9.1.5.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP|dBm according to Annex B.3.1 for a corresponding Band

Table 9.1.5.1-1: RSRQ Intra frequency absolute accuracy

Accuracy		Conditions				
Normal	Extreme		lo Note 1 range			
condition	condition	Ês/lot	E-UTRA operating band groups Note 4	Minimum Io	Maximum lo	
dB	dB	dB		dBm/15kHz Note 3	dBm/BW _{Channel}	
			FDD_A, TDD_A	-121	-50	
	±4	≥-3 dB	FDD_B	-120.5	-50	
			FDD_C, TDD_C	-120	-50	
			FDD_D	-119.5	-50	
±2.5			FDD_E, TDD_E	-119	-50	
			FDD_F	-118.5	-50	
			FDD_G	-118	-50	
			FDD_H	-117.5	-50	
			FDD_N	-114.5	-50	
±3.5	±4	≥-6 dB	Note 2	Note 2	Note 2	

NOTE 2: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.

NOTE 3: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 4: E-UTRA operating band groups are as defined in Section 3.5.

9.1.5.2 Absolute RSRQ Accuracy under Time Domain Measurement Resource Restriction

The requirements for absolute accuracy of RSRQ in this clause shall apply to a cell on the same frequency as that of the serving cell when a time domain measurement resource restriction pattern for performing RSRQ measurements of this cell is configured by higher layers (TS 36.331 [2]).

The accuracy requirements in Table 9.1.5.2-1 are valid under the following conditions:

Cell specific reference signals in the measured cell are transmitted either from one, two or four antenna ports,

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled,

RSRP_{dBm} according to Annex B.3.9 for a corresponding Band,

The time domain measurement resource restriction pattern configured for the measured cell indicates at least one subframe per radio frame for performing the RSRQ measurement,

The RSRQ measurement is not performed in any subframe other than those indicated by the time domain measurement resource restriction pattern configured for the measured cell,

Four symbols containing CRS are available in all subframes indicated by the time domain measurement resource restriction pattern.

Table 9.1.5.2-1: RSRQ Intra frequency absolute accuracy under time domain measurement resource restriction

Accuracy		Conditions				
Normal	Extreme		lo ^{Note 2} range			
condition	condition	Ês/lot	E-UTRA operating band groups Note 5	Minimum Io	Maximum lo	
dB	dB	dB		dBm/ 15kHz Note 1, 4	dBm/BW _{Channel}	
	±4		FDD_A, TDD_A	-121	-50	
		≥-2 dB	FDD_B	-120.5	-50	
			FDD_C, TDD_C	-120	-50	
			FDD_D	-119.5	-50	
±2.5			FDD_E, TDD_E	-119	-50	
			FDD_F	-118.5	-50	
			FDD_G	-118	-50	
			FDD_H	-117.5	-50	
			FDD_N	-114.5	-50	
±3.5	±4	≥-4 dB	Note 3	Note 3	Note 3	

- NOTE 1: This minimum lo condition is expressed as the average lo per RE over all REs in that symbol.
- NOTE 2: Io is defined in subframes indicated by the time domain measurement resource restriction pattern configured for performing RSRQ measurements of this cell. The lo range defined by the minimum and the maximum lo levels applies to CRS and non-CRS symbols. Io may be different in different symbols within a subframe.
- NOTE 3: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.
- NOTE 4: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.
- NOTE 5: E-UTRA operating band groups are as defined in Section 3.5.

For time domain measurements restriction under colliding CRS with ABS configured in non-MBSFN subframes, requirements in Section 9.1.5.1 apply.

9.1.5.3 Absolute RSRQ Accuracy under Time Domain Measurement Resource Restriction with CRS assistance information

The requirements for absolute accuracy of RSRQ in this section shall apply to a cell on the same frequency as that of the serving cell when a time domain measurement resource restriction pattern for performing RSRQ measurements of this cell is configured by higher layers (TS 36.331 [2]) and the CRS assistance information is provided. The requirements apply for UEs supporting CRS interference handling.

The accuracy requirements in Table 9.1.5.3-1 are valid under the following conditions:

Cell specific reference signals in the measured cell are transmitted either from one, two or four antenna ports,

Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled,

RSRP_{dBm} according to Annex B.3.11 for a corresponding Band,

The time domain measurement resource restriction pattern configured for the measured cell indicates at least one subframe per radio frame for performing the RSRQ measurement,

The RSRQ measurement is not performed in any subframe other than those indicated by the time domain measurement resource restriction pattern configured for the measured cell,

Four symbols containing CRS are available in all subframes indicated by the time domain measurement resource restriction pattern,

The UE is provided with the CRS assistance information (TS 36.331 [2]) and the CRS assistance information is valid throughout the entire evaluation period.

The requirements in this section shall also be met when the number of transmit antenna ports [16] of one or more cells whose CRS assistance information is provided [2] is different from the number of transmit antenna ports of the measured cell.

Table 9.1.5.3-1: RSRQ Intra frequency absolute accuracy under Time Domain Measurement Resource
Restriction with CRS assistance information

Accuracy		Conditions				
Normal	Extreme		lo Note 2 range			
condition	condition	Ês/lot Note 5	E-UTRA operating band groups ^{Note 6}	Minimum Io	Maximum lo	
dB	dB	dB		dBm/15kHz Note 1, 4	dBm/BW _{Channel}	
			FDD_A, TDD_A	-121	-50	
	±4	≥-6.96	FDD_B	-120.5	-50	
			FDD_C, TDD_C	-120	-50	
			FDD_D	-119.5	-50	
±2.5			FDD_E, TDD_E	-119	-50	
			FDD_F	-118.5	-50	
			FDD_G	-118	-50	
			FDD_H	-117.5	-50	
			FDD_N	-114.5	-50	
±3.5	±4	≥-9.46	Note 3	Note 3	Note 3	

- NOTE 1: This lo condition is expressed as the average lo per RE over all REs in that symbol.
- NOTE 2: Io is defined in subframes indicated by the time domain measurement resource restriction pattern configured for performing RSRQ measurements of this cell. The specified Io range applies to CRS and non-CRS symbols. Io may be different in different symbols within a subframe.
- NOTE 3: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.
- NOTE 4: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.
- NOTE 5: The gap between the Es/lot level in table 9.1.5.3-1 and 9.1.5.2-1 is due to the interference from either PCell or at least one neighbour cell indicated within the CRS assistance information.
- NOTE 6: E-UTRA operating band groups are as defined in Section 3.5.

9.1.5.4 Absolute WB-RSRQ Accuracy

The requirements in this section shall apply when the measurement configuration message received by the UE contains *widebandRSRQ-Meas* parameter in TS 36.331 [2]. The WB-RSRQ accuracy figures in Table 9.1.5.4-1 are relative to the value that would be obtained by using the *AllowedMeasBandwidth* in TS 36.331 [2].

The accuracy requirements in Table 9.1.5.4-1 are valid under the following conditions:

The value of the parameter, AllowedMeasBandwidth in TS 36.331 [2], is 50 resource blocks or larger

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in TS 36.101 [5] Clause 7.3 for reference sensitivity are fulfilled.

RSRP|dBm according to Annex B.3.1 for a corresponding Band.

Table 9.1.5.4-1: WB-RSRQ Intra frequency absolute accuracy

Accı	ıracy	Conditions					
Normal	Extreme	Ês/lot	lo1-lo2	lo range Note 1			
condition	condition	Note 3	Note 2	E-UTRA operating band groups Note 6	Minimum Io Note 5	Maximum lo	
dB	dB	dB	dB		dBm/15kHz	dBm/BW _{Channel}	
				FDD_A, TDD_A	-121	-50	
			0 ≤lo1- lo2	FDD_B	-120.5	-50	
				FDD_C, TDD_C	-120	-50	
				FDD_D	-119.5	-50	
±2.5	±4	≥-3 dB		FDD_E, TDD_E	-119	-50	
				FDD_F	-118.5	-50	
				FDD_G	-118	-50	
				FDD_H	-117.5	-50	
				FDD_N	-114.5	-50	
±3.5	±4	≥-6 dB		Note 4	Note 4	Note 4	

- NOTE 1: Io is the average across all the resource blocks within the AllowedMeasBandwidth in TS 36.331 [2].
- NOTE 2: Io1 is the Io level in the resource blocks other than central 6 resource blocks within the AllowedMeasBandwidth in TS 36.331 [2] and Io2 is the Io level in central 6 resource blocks. The Io1 and Io2 have the same range as defined for Io.
- NOTE 3: lot is the received power spectrum density of total interference and noise for all the resource blocks, other than central 6 resource blocks.
- NOTE 4: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.
- NOTE 5: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.
- NOTE 6: E-UTRA operating band groups are as defined in Section 3.5.

9.1.5A Intra-frequency RSRQ Accuracy Requirements in High Doppler Conditions

The accuracy requirements in this clause are applicable for [EVA300 and EVA600] propagation conditions and assume independent interference (noise) at each receiver antenna port.

9.1.5A.1 Absolute RSRQ Accuracy in high Doppler conditions

The requirements for absolute accuracy of RSRQ in this clause apply to a cell on the same frequency as that of the serving cell.

The accuracy requirements in Table 9.1.5A.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP|dBm according to Annex B.3.1 for a corresponding Band

Table 9.1.5A.1-1: RSRQ Intra frequency absolute accuracy

Accuracy		Conditions				
Normal	Extreme		lo Note 1 range			
condition	condition	Ês/lot	E-UTRA operating band groups Note 4	Minimum Io	Maximum lo	
dB	dB	dB		dBm/15kHz Note 3	dBm/BW _{Channel}	
			FDD_A, TDD_A	-121	-50	
	±5.5	≥-3 dB	FDD_B	-120.5	-50	
			FDD_C, TDD_C	-120	-50	
			FDD_D	-119.5	-50	
±4			FDD_E, TDD_E	-119	-50	
			FDD_F	-118.5	-50	
			FDD_G	-118	-50	
			FDD_H	-117.5	-50	
			FDD_N	-114.5	-50	
±5	±5.5	≥-6 dB	Note 2	Note 2	Note 2	

NOTE 2: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.

NOTE 3: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 4: E-UTRA operating band groups are as defined in Section 3.5.

9.1.6 Inter-frequency RSRQ Accuracy Requirements

9.1.6.1 Absolute RSRQ Accuracy

The requirements for absolute accuracy of RSRQ in this clause apply to a cell that has different carrier frequency from the serving cell.

The accuracy requirements in Table 9.1.6.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP|dBm according to Annex B.3.3 for a corresponding Band

Table 9.1.6.1-1: RSRQ Inter frequency absolute accuracy

Accuracy		Conditions				
Normal	Evtromo		lo ^{Note 1} range			
condition	Extreme condition	Ês/lot	E-UTRA operating band groups Note 4	Minimum Io	Maximum Io	
dB	dB	dB		dBm/15kHz Note 3	dBm/BW _{Channel}	
			FDD_A, TDD_A	-121	-50	
	±4	≥-3 dB	FDD_B	-120.5	-50	
			FDD_C, TDD_C	-120	-50	
			FDD_D	-119.5	-50	
±2.5			FDD_E, TDD_E	-119	-50	
			FDD_F	-118.5	-50	
			FDD_G	-118	-50	
			FDD_H	-117.5	-50	
			FDD_N	-114.5	-50	
±3.5	±4	≥-6 dB	Note 2	Note 2	Note 2	

NOTE 1: Io is assumed to have constant EPRE across the bandwidth.

NOTE 2: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.

NOTE 3: The condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 4: E-UTRA operating band groups are as defined in Section 3.5.

9.1.6.2 Relative Accuracy of RSRQ

The relative accuracy of RSRQ in inter frequency case is defined as the RSRQ measured from one cell compared to the RSRQ measured from another cell on a different frequency.

The accuracy requirements in Table 9.1.6.2-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP1,2|dBm according to Annex B.3.4 for a corresponding Band

$$\left| RSRP1 \right|_{dBm} - RSRP2 \Big|_{dBm} \right| \le 27 dB$$

| Channel 1_Io -Channel 2_Io | ≤ 20 dB

Table 9.1.6.2-1: RSRQ Inter frequency relative accuracy

Accuracy		Conditions				
Normal	Extreme	Ês/lot Note	lo Note 1 range			
condition	condition	2	E-UTRA operating band groups Note 5	Minimum Io	Maximum lo	
dB	dB	dB		dBm/15kHz Note 4	dBm/BW _{Channel}	
			FDD_A, TDD_A	-121	-50	
			FDD_B	-120.5	-50	
			FDD_C, TDD_C	-120	-50	
			FDD_D	-119.5	-50	
±3	±4	≥-3 dB	FDD_E, TDD_E	-119	-50	
			FDD_F	-118.5	-50	
			FDD_G	-118	-50	
			FDD_H	-117.5	-50	
			FDD_N	-114.5	-50	
±4	±4	≥-6 dB	Note 3	Note 3	Note 3	

NOTE 1: Io is assumed to have constant EPRE across the bandwidth.

NOTE 2: The parameter Ês/lot is the minimum Ês/lot of the pair of cells to which the requirement applies.

NOTE 3: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.

NOTE 4: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 5: E-UTRA operating band groups are as defined in Section 3.5.

9.1.6.3 Absolute WB-RSRQ Accuracy

The requirements in this section shall apply when the measurement configuration message received by the UE contains *widebandRSRQ-Meas* parameter in TS 36.331 [2]. The WB-RSRQ accuracy figures in Table 9.1.6.3-1 are relative to the value that would be obtained by using the *AllowedMeasBandwidth* in TS 36.331 [2].

The accuracy requirements in Table 9.1.6.3-1 are valid under the following conditions:

The value of the parameter, AllowedMeasBandwidth in TS 36.331 [2], is 50 resource blocks or larger

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in TS 36.101 [5] Clause 7.3 for reference sensitivity are fulfilled.

RSRP|dBm according to Annex B.3.1 for a corresponding Band.

Note 4

Note 4

±3.5

±4

Conditions Accuracy lo range Note 1 lo1-lo2 Note 2 Ês/lot Note 3 Normal **Extreme** E-UTRA operating band groups Note 6 Minimum lo condition condition Maximum lo dB dB dB dB dBm/15kHz dBm/BW_{Channel} FDD_A, TDD_A -121 -50 FDD B -120.5 -50 FDD_C, TDD_C -120 -50 FDD_D -119.5 -50 0 ≤lo1-±2.5 ±4 ≥-3 dB FDD_E, TDD_E -119 -50 lo2 FDD_F -118.5 -50 FDD G -118 -50 FDD H -117.5 -50 FDD_N -114.5 -50

Table 9.1.6.3-1: WB-RSRQ Inter frequency absolute accuracy

- NOTE 1: Io is the average across all the resource blocks within the AllowedMeasBandwidth in TS 36.331 [2].
- NOTE 2: lo1 is the lo level in the resource blocks other than central 6 resource blocks within the AllowedMeasBandwidth in TS 36.331 [2] and lo2 is the lo level in central 6 resource blocks. The lo1 and lo2 have the same range as defined for lo.

Note 4

- NOTE 3: lot is the received power spectrum density of total interference and noise for all the resource blocks, other than central 6 resource blocks.
- NOTE 4: The same bands and the same Io conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.
- NOTE 5: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.
- NOTE 6: E-UTRA operating band groups are as defined in Section 3.5.

≥-6 dB

9.1.6.4 Relative WB-RSRQ Accuracy

The requirements in this section shall apply when the measurement configuration message received by the UE contains *widebandRSRQ-Meas* parameter in TS 36.331 [2]. The WB-RSRQ accuracy figures in Table 9.1.6.4-1 are relative to the value that would be obtained by using the *AllowedMeasBandwidth* in TS 36.331 [2].

The accuracy requirements in Table 9.1.6.4-1 are valid under the following conditions:

The value of the parameter, *AllowedMeasBandwidth* in TS 36.331 [2], is 50 resource blocks or larger for the measured cells from different frequencies

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in TS 36.101 [5] Clause 7.3 for reference sensitivity are fulfilled.

 $RSRP1,2|_{dBm}$ according to Annex B.3.4 for a corresponding Band

$$\left| RSRP1 \right|_{dBm} - RSRP2 \Big|_{dBm} \right| \le 27 dB$$

| Channel 1_Io -Channel 2_Io | $\leq 20~dB$

Table 9.1.6.4-1: WB-RSRQ Inter frequency relative accuracy

Accı	ıracy			Conditions		
Normal	Extreme	Ês/lot	lo1-lo2	lo range ^{Note 1}		
condition		Note 3	Note 2	E-UTRA operating band groups Note 6	Minimum Io	Maximum lo
dB	dB	dB	dB		dBm/15kHz	dBm/BW _{Channel}
				FDD_A, TDD_A	-121	-50
			0 ≤lo1- lo2	FDD_B	-120.5	-50
				FDD_C, TDD_C	-120	-50
				FDD_D	-119.5	-50
±3	±4	≥-3 dB		FDD_E, TDD_E	-119	-50
				FDD_F	-118.5	-50
				FDD_G	-118	-50
				FDD_H	-117.5	-50
			<u> </u>	FDD_N	-114.5	-50
±4	±4	≥-6 dB		Note 4	Note 4	Note 4

- NOTE 1: Io is the average across all the resource blocks within the AllowedMeasBandwidth in TS 36.331 [2].
- NOTE 2: lo1 is the lo level in the resource blocks other than central 6 resource blocks within the AllowedMeasBandwidth in TS 36.331 [2] and lo2 is the lo level in central 6 resource blocks. The lo1 and lo2 have the same range as defined for lo.
- NOTE 3: lot is the received power spectrum density of total interference and noise for all the resource blocks, other than central 6 resource blocks. The parameter £s/lot is the minimum £s/lot of the pair of cells to which the requirement applies
- NOTE 4: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.
- NOTE 5: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.
- NOTE 6: E-UTRA operating band groups are as defined in Section 3.5.

9.1.6A Inter-frequency RSRQ Accuracy Requirements in High Doppler Conditions

The accuracy requirements in this clause are applicable for [EVA300 and EVA600] propagation conditions and assume independent interference (noise) at each receiver antenna port.

9.1.6A.1 Absolute RSRQ Accuracy in high Doppler conditions

The requirements for absolute accuracy of RSRQ in this clause apply to a cell that has different carrier frequency from the serving cell.

The accuracy requirements in Table 9.1.6A.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP|dBm according to Annex B.3.3 for a corresponding Band

Table 9.1.6A.1-1: RSRQ Inter frequency absolute accuracy

Accuracy		Conditions				
Normal	Extreme		lo Note 1 range			
condition	condition	Ês/lot	E-UTRA operating band groups Note 4	Minimum Io	Maximum Io	
dB	dB	dB		dBm/15kHz Note 3	dBm/BW _{Channel}	
			FDD_A, TDD_A	-121	-50	
	±5.5	≥-3 dB	FDD_B	-120.5	-50	
			FDD_C, TDD_C	-120	-50	
			FDD_D	-119.5	-50	
±4			FDD_E, TDD_E	-119	-50	
			FDD_F	-118.5	-50	
			FDD_G	-118	-50	
			FDD_H	-117.5	-50	
			FDD_N	-114.5	-50	
±5	±5.5	≥-6 dB	Note 2	Note 2	Note 2	

NOTE 2: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.

NOTE 3: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 4: E-UTRA operating band groups are as defined in Section 3.5.

9.1.6A.2 Relative Accuracy of RSRQ in high Doppler conditions

The relative accuracy of RSRQ in inter frequency case is defined as the RSRQ measured from one cell compared to the RSRQ measured from another cell on a different frequency.

The accuracy requirements in Table 9.1.6A.2-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP1,2|dBm according to Annex B.3.4 for a corresponding Band

$$\left| RSRP1 \right|_{dBm} - RSRP2 \Big|_{dBm} \right| \le 27 dB$$

| Channel 1_Io -Channel 2_Io | \leq 20 dB

-50

Note 3

-114.5

Note 3

±5.0

Conditions Io Note 1 Accuracy range Ês/lot Note Normal **Extreme** E-UTRA operating band groups Note 5 condition condition Minimum Io Maximum lo dBm/15kHz Note dB dB dB dBm/BW_{Channel} FDD_A, TDD_A -121 -50 FDD B -120.5 -50 FDD_C, TDD_C -120 -50 FDD_D -119.5 -50 FDD_E, TDD_E ±3.5 ±5.0 ≥-3 dB -119 -50 FDD_F -118.5 -50 FDD G -118 -50 -117.5 FDD_H -50

FDD_N

Note 3

Table 9.1.6A.2-1: RSRQ Inter frequency relative accuracy

NOTE 1: Io is assumed to have constant EPRE across the bandwidth.

≥-6 dB

- NOTE 2: The parameter Ês/lot is the minimum Ês/lot of the pair of cells to which the requirement applies.
- NOTE 3: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.
- NOTE 4: The condition level is increased by $\Delta > 0$, when applicable, as described in Sections B.4.2 and B.4.3.
- NOTE 5: E-UTRA operating band groups are as defined in Section 3.5.

9.1.7 RSRQ Measurement Report Mapping

The reporting range of RSRQ is defined from -34 dB to 2.5 dB with 0.5 dB resolution.

The mapping of measured quantity is defined in table 9.1.7-1. The range in the signalling may be larger than the guaranteed accuracy range.

Reported value Measured quantity value Unit RSRQ_-30 RSRQ < -34 dΒ RSRQ_-29 -34 ≤ RSRQ < -33.5 dB RSRQ -02 dB -20.5 ≤ RSRQ < -20 RSRQ_-01 -20 ≤ RSRQ < -19.5 dB RSRQ_00 dB RSRQ < -19.5 -19.5 ≤ RSRQ < -19 RSRQ_01 dB RSRQ 02 dB -19 ≤ RSRQ < -18.5 RSRQ 32 -4 ≤ RSRQ < -3.5 dB RSRQ_33 -3.5 ≤ RSRQ < -3 dB RSRQ_34 dB -3 ≤ RSRQ RSRQ_35 dB -3 ≤ RSRQ < -2.5 RSRQ_36 dΒ -2.5 ≤ RSRQ < -2 RSRQ_45 2 ≤ RSRQ < 2.5 dB RSRQ_46 2.5 ≤ RSRQ dB

Table 9.1.7-1: RSRQ measurement report mapping

Note: The ranges from RSRQ_-30 to RSRQ_-01 and from RSRQ_35 to RSRQ_46 apply for the UE who can support extended RSRQ range in [31].

9.1.8 Power Headroom

The requirements in this clause shall apply for power headroom Type 1 and for power headroom Type 2, which are specified in clause 5.1.1.2 in [3].

For a UE not configured with a secondary cell, the power headroom provides the serving eNB with information about the differences between the UE configured maximum output power (P_{CMAX}) defined in TS 36.101 [5] and the estimated power for UL-SCH transmission of the serving cell [3]. In this case the UE shall meet requirements for power headroom Type 1.

For a UE configured with a secondary cell, the power headroom provides the serving eNB with information about the differences between the UE configured maximum output power ($P_{CMAX,c}$) defined in TS 36.101[5] and the estimated power for UL-SCH transmission per activated serving cell c, or the estimated power for simultaneous PUSCH and PUCCH transmission on PCell [3]. In this case the UE shall meet requirements for both power headroom Type 1 and Type 2.

9.1.8.1 Period

The reported power headroom shall be estimated over 1 subframe.

When *extendedPHR* is not configured [17], the Type 1 power headroom shall be estimated for the primary serving cell as defined in clause 5.1.1.2 in TS 36.213 [3].

When *extendedPHR* is configured [17], the Type 1 and Type 2 power headroom shall be estimated for each activated serving cell with configured uplink as defined in clause 5.1.1.2 in TS 36.213 [3].

9.1.8.2 Reporting Delay

The power headroom reporting delay is defined as the time between the beginning of the power headroom reference period and the time when the UE starts transmitting the power headroom over the radio interface. The reporting delay of the power headroom shall be 0 ms, which is applicable for all configured triggering mechanisms for power headroom reporting.

9.1.8.3 Void

9.1.8.4 Report Mapping

The power headroom reporting range is from -23 ...+40 dB. Table 9.1.8.4-1 defines the report mapping.

Reported value Measured quantity value (dB) POWER_HEADROOM_0 -23 ≤ PH < -22 POWER_HEADROOM_1 -22 ≤ PH < -21 POWER_HEADROOM_2 -21 ≤ PH < -20 POWER HEADROOM 3 -20 ≤ PH < -19 POWER_HEADROOM_4 -19 ≤ PH < -18 POWER_HEADROOM_5 -18 ≤ PH < -17 POWER HEADROOM 57 $34 \le PH < 35$ POWER_HEADROOM_58 $35 \le PH < 36$ POWER_HEADROOM_59 $36 \le PH < 37$ POWER_HEADROOM_60 $37 \le PH < 38$ POWER_HEADROOM_61 $38 \le PH < 39$ $39 \le \overline{PH} < 40$ POWER_HEADROOM_62 POWER_HEADROOM_63 PH ≥ 40

Table 9.1.8.4-1: Power headroom report mapping

9.1.9 UE Rx – Tx time difference

9.1.9.1 Measurement Requirement

The UE RX-TX time difference is measured from the PCell.

The accuracy requirements in Table 9.1.9.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

No changes to the uplink transmission timing are applied during the measurement period.

RSRP_{dBm} according to Annex B.3.5 for a corresponding Band

Table 9.1.9.1-1: UE Rx - Tx time difference measurement accuracy

		Conditions								
		Downlink	lo Note 1 range							
Accuracy	Ês/lot	transmission bandwidth of PCell	E-UTRA operating band groups ^{Note 6}	Minimum Io	Maximum Io					
Ts Note 2	dB	MHz		dBm/15kHz Note 5	dBm/BW _{Channel}					
			FDD_A, TDD_A	-121	-50					
		≥1.4 MHz	FDD_B	-120.5	-50					
	≥-3 dB		FDD_C, TDD_C	-120	-50					
			FDD_D	-119.5	-50					
±20			FDD_E, TDD_E	-119	-50					
			FDD_F	-118.5	-50					
			FDD_G Note 4	-118	-50					
			FDD_H	-117.5	-50					
			FDD_N	-114.5	-50					
±14	≥-3 dB	≥ 3 MHz	Note 3	Note 3	Note 3					
±10	≥-3 dB	≥ 5 MHz	Note 3	Note 3	Note 3					
±7	≥-3 dB	≥10 MHz	Note 3	Note 3	Note 3					

NOTE 1: When in dBm/15kHz, the minimum lo condition is expressed as the average lo per RE over all REs in that symbol. Io may be different in different symbols within a subframe.

NOTE 2: Ts is the basic timing unit defined in TS 36.211.

NOTE 3: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding requirement with downlink bandwidth ≥1.4 MHz.

NOTE 4: Except Band 29 and Band 32.

NOTE 5: The condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 6: E-UTRA operating band groups are as defined in Section 3.5.

9.1.9.2 Measurement Report mapping

The reporting range of UE Rx - Tx time difference is defined from 0 to $20472T_s$ with $2T_s$ resolution for UE Rx - Tx time difference less than $4096T_s$ and 8Ts for UE Rx - Tx time difference equal to or greater than $4096T_s$.

The mapping of measured quantity is defined in Table 9.1.9.2-1.

Table 9.1.9.2-1: UE Rx - Tx time difference measurement report mapping

Reported value	Measured quantity value	Unit
RX-TX_TIME_DIFFERENCE_0000	$T_{UE\ Rx-Tx} < 2$	T _s
RX-TX_TIME_DIFFERENCE_0001	$2 \le T_{UE Rx-Tx} < 4$	Ts
RX-TX_TIME_DIFFERENCE_0002	$4 \le T_{UE Rx-Tx} < 6$	Ts
		•••
RX-TX_TIME_DIFFERENCE_2046	$4092 \le T_{UE Rx-Tx} < 4094$	T _s
RX-TX_TIME_DIFFERENCE_2047	$4094 \le T_{UE\ Rx-Tx} < 4096$	T _s
RX-TX_TIME_DIFFERENCE_2048	$4096 \le T_{UE Rx-Tx} < 4104$	Ts
RX-TX_TIME_DIFFERENCE_2049	$4104 \le T_{UE Rx-Tx} < 4112$	Ts
		•••
RX-TX_TIME_DIFFERENCE_4093	$20456 \le T_{UE\ Rx-Tx} < 20464$	T _s
RX-TX_TIME_DIFFERENCE_4094	$20464 \le T_{UE\ Rx-Tx} < 20472$	Ts
RX-TX_TIME_DIFFERENCE_4095	20472 ≤ THE RY-TY	Ts

9.1.9.3 Measurement Requirement under Time Domain Measurement Resource Restriction

The requirements in this section apply for UE configured with a time-domain measurement resource restriction pattern for PCell measurements. The UE Rx-Tx time difference is measured from the Pcell.

The accuracy requirements in Table 9.1.9.3-1 are valid under the following conditions:

- Cell specific reference signals are transmitted either from one, two or four antenna ports,
- Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled,
- No changes to the uplink transmission timing are applied during the measurement period,

RSRP_{dBm} according to Annex B.3.5 for a corresponding Band,

- The time domain measurement resource restriction pattern configured for the PCell indicates at least one subframe per radio frame for performing the PCell measurements [2],
- Four symbols containing CRS are available in all subframes indicated by the time domain measurement resource restriction pattern.

Table 9.1.9.3-1: UE Rx–Tx time difference measurement accuracy under time domain measurement resource restriction

	Conditions						
		Downlink	lo Note 1, 5 range				
Accuracy	Ês/lot Note 6	transmission bandwidth of PCell	E-UTRA operating band groups ^{Note 8}	Minimum Io	Maximum Io		
Ts Note 2	dB	MHz		dBm/15kHz Note 7	dBm/BW _{Channel}		
		≤ 3 MHz	FDD_A, TDD_A	-121	-50		
			FDD_B	-120.5	-50		
			FDD_C, TDD_C	-120	-50		
			FDD_D	-119.5	-50		
±20	≥-3 dB		FDD_E, TDD_E	-119	-50		
			FDD_F	-118.5	-50		
			FDD_G Note 4	-118	-50		
			FDD_H	-117.5	-50		
			FDD_N	-114.5	-50		
±10	≥-3 dB	≥ 5 MHz	Note 3	Note 3	Note 3		

NOTE 1: When in dBm/15kHz, the minimum lo condition is expressed as the average lo per RE over all REs in that symbol. Io may be different in different symbols within a subframe.

NOTE 2: Ts is the basic timing unit defined in TS 36.211.

NOTE 3: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding requirement with downlink bandwidth ≤ 3 MHz.

NOTE 4: Except Band 29 and Band 32.

NOTE 5: Io is defined for the subframes indicated by the time-domain measurement resource restriction pattern for serving cell measurements. The specified Io range applies to CRS and non-CRS symbols. Io may be different in different symbols within a subframe.

NOTE 6: CRS És/lot is in subframes indicated for PCell measurements by the time-domain measurement resource restriction pattern.

NOTE 7: The condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 8: E-UTRA operating band groups are as defined in Section 3.5.

NOTE: It is up to the UE implementation whether the UE Rx-Tx time difference measurement is performed in any subframe or in subframes indicated by the time-domain measurement resource restriction pattern.

9.1.9.4 Measurement Requirement when Time Domain Measurement Resource Restriction Pattern is Configured with CRS Assistance Information

The UE Rx-Tx time difference measurement is performed for the PCell.

For UE configured with a time-domain measurement resource restriction pattern for PCell measurements, the accuracy requirements in Table 9.1.9.4-1 apply provided that the following conditions are met for the PCell:

- PCell cell specific reference signals are transmitted from one, two or four antenna ports,
- Conditions defined in 36.101 Section 7.3 for reference sensitivity are fulfilled,
- No changes to the uplink transmission timing are applied during the measurement period,
- RSRP_{dBm} according to Annex B.3.13 for a corresponding Band,
- The time domain measurement resource restriction pattern configured for the measured cell indicates at least one subframe per radio frame for performing the RSRP measurement,
- Four symbols containing CRS are available in all subframes indicated by the time domain measurement resource restriction pattern, and
- The UE is provided via PCell with the CRS assistance information (TS 36.331 [2]) and the CRS assistance information is valid throughout the entire evaluation period.

The requirements in this section shall also be met when the number of transmit antenna ports [16] of one or more cells whose CRS assistance information is provided [2] is different from the number of transmit antenna ports of the measured cell.

When the CRS assistance information is provided, the transmission bandwidth [30] in all intra-frequency cells in the CRS assistance information [2] is the same or larger than the transmission bandwidth of the PCell for which measurement is performed.

Table 9.1.9.4-1: UE Rx-Tx time difference measurement accuracy

	Conditions							
		Downlink transmission bandwidth of PCell	lo range Note 5					
Accuracy	CRS Ês/lot Note 6		E-UTRA operating band groups Note 8	Minimum Io Note 1, 7	Maximum Io			
Ts Note 2	dB	MHz		dBm/15kHz Note 7	dBm/BW _{Channel}			
		≤ 3 MHz	FDD_A, TDD_A	-121	-50			
			FDD_B	-120.5	-50			
			FDD_C, TDD_C	-120	-50			
			FDD_D	-119.5	-50			
±20	≥-7.76		FDD_E, TDD_E	-119	-50			
			FDD_F	-118.5	-50			
			FDD_G Note 4	-118	-50			
			FDD_H	-117.5	-50			
			FDD_N	-114.5	-50			
±10	≥-7.76	≥ 5 MHz	Note 3	Note 3	Note 3			

NOTE 1: This lo condition is expressed as the average lo per RE over all REs in an OFDM symbol.

NOTE 2: Ts is the basic timing unit defined in TS 36.211.

NOTE 3: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding requirement with downlink bandwidth ≤ 3 MHz.

NOTE 4: Except Band 29 and Band 32.

NOTE 5: Io is defined in subframes indicated for PCell measurements by the time domain measurement resource restriction pattern. The specified Io range applies to CRS and non-CRS symbols. Io may be different in different symbols within a subframe.

NOTE 6: CRS Ês/lot is in subframes indicated for PCell measurements by the time-domain measurement resource restriction pattern.

NOTE 7: The condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 8: E-UTRA operating band groups are as defined in Section 3.5.

NOTE: It is up to the UE implementation whether the UE Rx-Tx time difference measurement is performed in any subframe or in subframes indicated by the time-domain measurement resource restriction pattern.

9.1.10 Reference Signal Time Difference (RSTD)

NOTE: This measurement is used for UE positioning purposes.

9.1.10.1 Intra-Frequency Accuracy Requirement

The accuracy requirements in Table 9.1.10.1-1 are valid under the following conditions:

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

PRP 1,2|dBm according to Annex B.3.6 for a corresponding Band

There are no measurement gaps overlapping with the PRS subframes of the measured serving cell.

The parameter expected RSTDU ncertainty signalled over LPP by E-SMLC as defined in TS 36.355 [24] is less than 5 μ s.

Table 9.1.10.1-1: RSTD measurement accuracy

	Conditions							
		Minimum		lo Note 7 range				
Accuracy	PRS Ês/lot	PRS bandwidth, which is minimum of serving cell channel bandwidth and the PRS bandwidths of the reference cell and the measured neighbour cell i Note 5	Minimum number of available measurement subframes among the reference cell and the measured neighbour cell i	E-UTRA operating band groups ^{Note 8}	Minimum Io ^{Note 1}	Maximum Io		
Ts Note 2	dB	RB			dBm/15kHz Note 6	dBm/BW _{Channe}		
	(PRS Ês/lot) _{ref} ≥-6dB and (PRS Ês/lot) _i ≥-13dB	≥ 6	6	FDD_A, TDD_A	-121	-50		
				FDD_B	-120.5	-50		
				FDD_C, TDD_C	-120	-50		
				FDD_D	-119.5	-50		
±15				FDD_E, TDD_E	-119	-50		
				FDD_F	-118.5	-50		
				FDD_G	-118	-50		
				FDD_H	-117.5	-50		
				FDD_N	-114.5	-50		
±10	(PRS Ês/lot) _{ref} ≥- 6dB and (PRS Ês/lot) _i ≥-13dB	≥ 15	6	Note 4	Note 4	Note 4		
±6	(PRS Ês/lot) _{ref} ≥- 6dB and (PRS Ês/lot) _i ≥-13dB	≥ 25	≥ 2	Note 4	Note 4	Note 4		
±5	(PRS Ês/lot) _{ref} ≥- 6dB and (PRS Ês/lot) _i ≥-13dB	≥ 50	≥1	Note 4	Note 4	Note 4		
±4	(PRS Ês/lot) _{ref} ≥- 6dB and (PRS Ês/lot) _i ≥-13dB	≥ 75	≥1	Note 4	Note 4	Note 4		

- NOTE 1: This minimum lo condition is expressed as the average lo per RE over all REs in an OFDM symbol.
- NOTE 2: Ts is the basic timing unit defined in TS 36.211 [16].
- NOTE 3: PRS bandwidth is as indicated in prs-Bandwidth in the OTDOA assistance data defined in [24].
- NOTE 4: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding requirement with the PRS bandwidth ≥ 6 RB.
- NOTE 5: The serving cell, the reference cell, and the measured neighbour cell i are on the same carrier frequency.
- NOTE 6: The condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.
- NOTE 7: The Io is defined in PRS positioning subframes. The same Io range applies to PRS and non-PRS symbols. Io levels are different in PRS and non-PRS symbols within the same subframe.
- NOTE 8: E-UTRA operating band groups are as defined in Section 3.5.

9.1.10.2 Inter-Frequency Accuracy Requirement

The accuracy requirements in Table 9.1.10.2-1 are valid under the following conditions:

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

PRP 1,2|dBm according to Annex B.3.7 for a corresponding Band

There are no measurement gaps overlapping with the PRS subframes in cells belonging to the serving carrier frequency.

The parameter expected RSTD Uncertainty signalled over LPP by E-SMLC as defined in TS 36.355 [24] is less than $5 \mu s$.

Table 9.1.10.2-1: RSTD measurement accuracy

	Conditions									
Accuracy	PRS Ês/lot	Minimum PRS bandwidth which is minimum of serving cell channel bandwidth 7 and the PRS	Minimum number of available measurement subframes among the		Minimum Io Note 1	Maximum				
	dB	bandwidths of the reference cell and the measured neighbour cell i		band groups	dBm/15kHz	lo dBm/BW _{Chan}				
Ts Note 2	45	RB			Note 5	nel				
±21	(PRS Ês/lot) _{ref} ≥-6dB and (PRS Ês/lot) _i ≥-13dB	≥ 6	4	FDD_A, TDD_A FDD_B FDD_C, TDD_C FDD_D FDD_E, TDD_E FDD_F FDD_G FDD_H FDD_N	-121 -120.5 -120 -119.5 -119 -118.5 -118 -117.5 -114.5	-50 -50 -50 -50 -50 -50 -50 -50				
±16	(PRS Ês/lot) _{ref} ≥-6dB and (PRS Ês/lot) _i ≥-13dB	≥ 15	4	Note 4	Note 4	Note 4				
±10	(PRS Ês/lot) _{ref} ≥-6dB and (PRS Ês/lot) _i ≥-13dB	≥ 25	≥ 2	Note 4	Note 4	Note 4				
±9	(PRS Ês/lot) _{ref} ≥-6dB and (PRS Ês/lot) _i ≥-13dB	≥ 50	≥ 1	Note 4	Note 4	Note 4				
±8	(PRS Ês/lot) _{ref} ≥-6dB and (PRS Ês/lot) _i ≥-13dB	≥ 75	≥ 1	Note 4	Note 4	Note 4				

- NOTE 1: This minimum lo condition is expressed as the average lo per RE over all REs in an OFDM symbol.
- NOTE 2: Ts is the basic timing unit defined in TS 36.211 [16].
- NOTE 3: PRS bandwidth is as indicated in prs-Bandwidth in the OTDOA assistance data defined in [24].
- NOTE 4: The same bands and the same Io conditions for each band apply for this requirement as for the corresponding requirement with the PRS bandwidth ≥ 6 RB.
- NOTE 5: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.
- NOTE 6: The Io is defined in PRS positioning subframes. The same Io range applies to PRS and non-PRS symbols. Io levels are different in PRS and non-PRS symbols within the same subframe.
- NOTE 7: If a CA capable UE is configured with one or two SCell(s), the serving cell channel bandwidth is the minimum of the serving cell channel bandwidths in the component carriers involved in the RSTD measurement. If any of the serving cells is not involved in this RSTD measurement for CA, the channel bandwidth of that serving cell is not included in the determination of the minimum PRS bandwidth.
- NOTE 8: E-UTRA operating band groups are as defined in Section 3.5.

9.1.10.3 RSTD Measurement Report Mapping

The reporting range of RSTD is defined from -15391 T_s to 15391 T_s with 1 T_s resolution for absolute value of RSTD less or equal to 4096 T_s and 5 T_s for absolute value of RSTD greater than 4096 T_s .

The mapping of measured quantity is defined in Table 9.1.10.3-1.

Table 9.1.10.3-1: RSTD report mapping

Reported Value	Measured Quantity Value	Unit
RSTD_0000	-15391 > RSTD	$T_{\rm s}$
RSTD_0001	-15391 ≤ RSTD < -15386	$T_{\rm s}$
RSTD_2258	-4106 ≤ RSTD < -4101	$T_{\rm s}$
RSTD_2259	-4101 ≤ RSTD < -4096	$T_{\rm s}$
RSTD_2260	-4096 ≤ RSTD < -4095	$T_{\rm s}$
RSTD_2261	-4095 ≤ RSTD < -4094	$T_{\rm s}$
RSTD_6353	-3 ≤ RSTD < -2	Ts
RSTD_6354	-2 ≤ RSTD < -1	Ts
RSTD_6355	-1 ≤ RSTD ≤ 0	T_s
RSTD_6356	0 < RSTD ≤ 1	Ts
RSTD_6357	1 < RSTD ≤ 2	Ts
RSTD_6358	2 < RSTD ≤ 3	T _s
RSTD_10450	4094 < RSTD ≤ 4095	Ts
RSTD_10451	4095 < RSTD ≤ 4096	T _s
RSTD_10452	4096 < RSTD ≤ 4101	Ts
RSTD_10453	4101 < RSTD ≤ 4106	T _s
RSTD_12709	15381 < RSTD ≤ 15386	T _s
RSTD_12710	15386 < RSTD ≤ 15391	Ts
RSTD_12711	15391 < RSTD	Ts

9.1.11 Carrier aggregation measurement accuracy

This clause contains requirements on UE capabilities for support of E-UTRA FDD, TDD and TDD-FDD carrier aggregation. Requirements in this clause are applicable to all carrier aggregation capable UEs which have been configured with up to four downlink SCell(s). Note: This clause covers measurement accuracy requirements for frequencies corresponding to those used for the PCell and SCell(s); measurements of any other frequency are considered to be inter-frequency measurements covered by the accuracy requirements in clause 9.1.3 and 9.1.6

The requirements in this clause apply for bandwidths defined in the bandwidth combination set for the CA configurations supported by the UE [5].

9.1.11.1 Primary component carrier accuracy requirement

RSRP and RSRQ measurements of cells on the primary component carrier shall meet the intrafrequency absolute accuracy requirements in sections 9.1.2.1 and 9.1.5.1. Comparisons between RSRP of cells on the primary component carrier shall also meet the intra-frequency relative accuracy requirements in sections 9.1.2.2.

9.1.11.2 Secondary component carrier accuracy requirement

RSRP and RSRQ measurements of cells on any of the secondary component carrier(s) shall meet the intrafrequency absolute accuracy requirements in sections 9.1.2.1 and 9.1.5.1. Comparisons between RSRP of cells on the same secondary component carrier shall meet the intra-frequency relative accuracy requirements in sections 9.1.2.2

9.1.11.3 Primary and secondary component carrier relative accuracy requirement

When measurements of cells on the primary component carrier are compared with measurements of cells on any of the secondary component carrier(s), the applicable relative accuracy requirements are the RSRP and RSRQ inter-frequency accuracy requirements in sections 9.1.3.2 and 9.1.6.2.

9.1.11.4 Secondary component carrier relative accuracy requirement

When measurements of cells on any of the secondary component carrier(s) are compared with measurements of cells on the other secondary component carrier, the applicable relative accuracy requirements are the RSRP and RSRQ interfrequency accuracy requirements in sections 9.1.3.2 and 9.1.6.2.

9.1.12 Reference Signal Time Difference (RSTD) Measurement Accuracy Requirements for Carrier Aggregation

This clause contains requirements for E-UTRA FDD, TDD and TDD-FDD carrier aggregation. This clause contains RSTD measurement accuracy requirements for a UE configured with one or two downlink SCell(s). The UE may operate in one of the E-UTRA carrier aggregations listed in clause 8.3.1. The requirements in this clause shall apply regardless whether the configured downlink secondary cell is activated or deactivated by the MAC-CE command [17]. The requirements apply for bandwidths defined in the bandwidth combination set for the CA configurations supported by the UE [5].

The RSTD measurements, which are obtained when both the reference cell and neighbouring cell belong to the primary component carrier, shall meet the intra-frequency RSTD accuracy requirements defined in clause 9.1.10.1.

The RSTD measurements, which are obtained when both the reference cell and neighbouring cell belong to the same secondary component carrier, shall meet the intra-frequency RSTD accuracy requirements defined in clause 9.1.10.1.

The RSTD measurements, which are obtained when the reference cell and neighbouring cell do not belong to the same carrier, shall meet the inter-frequency RSTD accuracy requirements defined in clause 9.1.10.2.

9.1.13 Measurement accuracy for UE category 0

9.1.13.1 Intra-frequency Absolute RSRP Accuracy for UE category 0

The requirements for absolute accuracy of RSRP in this clause apply to a cell on the same frequency as that of the serving cell for UE category 0.

The accuracy requirements in Table 9.1.13.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP|dBm according to Annex B.3.1 for a corresponding Band

At least 1 DL subframe per radio frame of measured cell is available at the UE for RSRP measurement assuming measured cell is identified cell.

Table 9.1.13.1-1: RSRP Intra frequency absolute accuracy for UE category 0

Accuracy Conditions							
Normal Extreme condition			lo Note 1 range				
		Ês/lot	E-UTRA operating band groups Note 3	Minin	Minimum Io		
dB	dB	dB		dBm/15kHz Note 2	dBm/BW _{Channel}	dBm/BW _{Channel}	
			FDD_A, TDD_A	-121	N/A	-70	
		-	FDD_B	-120.5	N/A	-70	
			FDD_C, TDD_C	-120	N/A	-70	
			FDD_D	-119.5	N/A	-70	
±7	±10	≥-6 dB	FDD_E, TDD_E	-119	N/A	-70	
			FDD_F	-118.5	N/A	-70	
			FDD_G	-118	N/A	-70	
			FDD_H	-117.5	N/A	-70	
			FDD_N	-114.5	N/A	-70	
±9	±12	≥-6 dB	FDD_A, TDD_A, FDD B, FDD_C, TDD_C, FDD_D, FDD_E, TDD_E, FDD_F, FDD_G, FDD_H, FDD_N	N/A	-70	-50	

NOTE 2: The condition level is increased by ∆>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

9.1.13.2 Intra-frequency Relative Accuracy of RSRP for UE category 0

The relative accuracy of RSRP is defined as the RSRP measured from one cell compared to the RSRP measured from another cell on the same frequency for category 0 UE.

The accuracy requirements in Table 9.1.13.2-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP1,2|_{dBm} according to Annex B.3.8 for a corresponding Band.

At least 1 DL subframe per radio frame of measured cell is available at the UE for RSRP measurement assuming measured cell is identified cell.

Table 9.1.13.2-1: RSRP Intra frequency relative accuracy for UE category 0

Accı	ıracy		Condition			
Normal	Extreme	Ês/lot Note	lo ^{Note 1} range			
condition	condition	ES/10t	E-UTRA operating band groups Note 5	Minimum Io	Maximum Io	
dB	dB	dB		dBm/15kHz Note 4	dBm/BW _{Channel}	
	±4		FDD_A, TDD_A	-121	-50	
		≥-3 dB	FDD_B	-120.5	-50	
			FDD_C, TDD_C	-120	-50	
			FDD_D	-119.5	-50	
±3			FDD_E, TDD_E	-119	-50	
			FDD_F	-118.5	-50	
			FDD_G	-118	-50	
			FDD_H	-117.5	-50	
			FDD_N	-114.5	-50	
±4	±4	≥-6 dB	Note 3	Note 3	Note 3	

- NOTE 1: Io is assumed to have constant EPRE across the bandwidth.
- NOTE 2: The parameter Ês/lot is the minimum Ês/lot of the pair of cells to which the requirement applies.
- NOTE 3: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.
- NOTE 4: The condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.
- NOTE 5: E-UTRA operating band groups are as defined in Section 3.5.

9.1.13.3 Intra-frequency Absolute RSRQ Accuracy for UE category 0

The requirements for absolute accuracy of RSRQ in this clause apply to a cell on the same frequency as that of the serving cell for category 0 UE.

The accuracy requirements in Table 9.1.13.3-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP|dBm according to Annex B.3.1 for a corresponding Band

At least 1 DL subframe per radio frame of measured cell is available at the UE for RSRQ measurement assuming measured cell is identified cell.

Table 9.1.13.3-1: RSRQ Intra frequency absolute accuracy for UE category 0

Accı	ıracy		Conditions				
Normal	Extreme		lo Note 1 range				
condition	condition	Ês/lot	E-UTRA operating band groups Note 4	Minimum Io	Maximum Io		
dB	dB	dB		dBm/15kHz Note 3	dBm/BW _{Channel}		
	±5		FDD_A, TDD_A	-121	-50		
		≥-3 dB	FDD_B	-120.5	-50		
			FDD_C, TDD_C	-120	-50		
			FDD_D	-119.5	-50		
±3.5			FDD_E, TDD_E	-119	-50		
			FDD_F	-118.5	-50		
			FDD_G	-118	-50		
			FDD_H	-117.5	-50		
			FDD_N	-114.5	-50		
±4.5	±5	≥-6 dB	Note 2	Note 2	Note 2		

NOTE 1: Io is assumed to have constant EPRE across the bandwidth.

NOTE 2: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.

NOTE 3: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 4: E-UTRA operating band groups are as defined in Section 3.5.

9.1.14 Accuracy requirements for Discovery Signal Measurements

9.1.14.1 Introduction

Discovery signal measurements are performed when higher layers indicate measurements based on discovery signals according to DMTC configuration [2]. The discovery measurement accuracy requirements are defined for the following physical layer measurements performed in discovery signal occasions [16],

RSRP measured in subframes of the configured discovery signal occasions as specified in [4],

CSI-RSRP measurements specified in [4],

RSRQ measured in subframes of the configured discovery signal occasions as specified in [4].

9.1.14.2 RSRP measurements in discovery signal occasions

Intra-frequency absolute RSRP measurement accuracy requirements in discovery signal occasions are the same as specified in Section 9.1.2.1.

Intra-frequency relative RSRP measurement accuracy requirements in discovery signal occasions are the same as specified in Section 9.1.2.2.

Inter-frequency absolute RSRP measurement accuracy requirements in discovery signal occasions are the same as specified in Section 9.1.3.1.

Inter-frequency relative RSRP measurement accuracy requirements in discovery signal occasions are the same as specified in Section 9.1.3.2.

Measurement report mapping for RSRP measurements in discovery signal occasions are the same as specified in Section 9.1.4.

9.1.14.3 CSI-RSRP measurements in discovery signal occasions

9.1.14.3.1 Intra-frequency CSI-RSRP measurements

9.1.14.3.1.1 Absolute CSI-RSRP measurement requirements

In this clause, absolute CSI-RSRP measurement accuracy requirements in discovery signal occasions apply to a cell or TP on the same frequency as that of the serving cell.

The accuracy requirements in Table 9.1.14.3.1.1-1 are valid under the following conditions:

CSI reference signals in discovery signal occasions are transmitted on one antenna port only from each TP,

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

CSI-RSRP is specified in Annex B.3.14 for a corresponding Band.

Table 9.1.14.3.1.1-1: Intra-frequency absolute CSI-RSRP measurement accuracy

Accı	ıracy						
Normal	Normal Extreme condition		lo ^{Note 1} range				
			E-UTRA operating band groups Note 3	Minin	num lo	Maximum Io	
dB	dB	dB		dBm/15kHz Note 2	dBm/BW _{Channel}	dBm/BW _{Channel}	
_			FDD_A, TDD_A	-121	N/A	-70	
			FDD_B	-120.5	N/A	-70	
		≥ 0 dB	FDD_C, TDD_C	-120	N/A	-70	
			FDD_D	-119.5	N/A	-70	
±4.5	±9		FDD_E, TDD_E	-119	N/A	-70	
			FDD_F	-118.5	N/A	-70	
			FDD_G	-118	N/A	-70	
			FDD_H	-117.5	N/A	-70	
			FDD_N	-114.5	N/A	-70	
±8	±11	≥0 dB	FDD_A, TDD_A, FDD B, FDD_C, TDD_C, FDD_D, FDD_E, TDD_E, FDD_F, FDD_G, FDD_H, FDD_N	N/A	-70	-50	

NOTE 2: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

9.1.14.3.1.2 Relative CSI-RSRP measurement requirements

In this section, the relative CSI-RSRP measurement is defined as the CSI-RSRP measured from one cell or TP compared to the CSI-RSRP measured on the same frequency from another cell or from another TP. If two TPs are compared, they may belong to the same or different cells.

The accuracy requirements in Table 9.1.14.3.1.2-1 are valid under the following conditions:

CSI reference signals in discovery signal occasions are transmitted on one antenna port only from each TP.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

CSI-RSRP is specified in Annex B.3.15 for a corresponding Band.

Table 9.1.14.3.1.2-1: Intra-frequency relative CSI-RSRP measurement accuracy

Accı	Accuracy Conditions					
Normal	Extreme	CSI	lo Note 1 range			
condition	condition	Ês/lot Note 2	E-UTRA operating band groups Note 5	Minimum Io	Maximum Io	
dB	dB	dB		dBm/15kHz Note 4	dBm/BW _{Channel}	
			FDD_A, TDD_A	-121	-50	
	±3	≥0 dB	FDD_B	-120.5	-50	
			FDD_C, TDD_C	-120	-50	
			FDD_D	-119.5	-50	
±2			FDD_E, TDD_E	-119	-50	
			FDD_F	-118.5	-50	
			FDD_G	-118	-50	
			FDD_H	-117.5	-50	
			FDD_N	-114.5	-50	
±3	±3	≥ 0 dB	Note 3	Note 3	Note 3	

NOTE 1: Io is assumed to have constant EPRE across the bandwidth.

NOTE 2: The parameter CSI Ês/lot is the minimum CSI Ês/lot of the pair of cells or TPs to which the requirement applies.

NOTE 3: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.

NOTE 4: The condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 5: E-UTRA operating band groups are as defined in Section 3.5.

9.1.14.3.2 Inter-frequency CSI-RSRP measurements

9.1.14.3.2.1 Absolute CSI-RSRP measurement requirements

In this clause, absolute CSI-RSRP measurement accuracy requirements for discovery signal measurements apply to a cell or TP on a different carrier frequency from that of the serving cell.

The accuracy requirements in Table 9.1.14.3.2.1-1 are valid under the following conditions:

CSI reference signals in discovery signal occasions are transmitted on one antenna port only from each TP.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

CSI-RSRP is specified in Annex B.3.16 for a corresponding Band.

Table 9.1.14.3.2.1-1: Inter-frequency absolute CSI-RSRP measurement accuracy

Accuracy		Conditions					
Normal	Extreme	CSI	lo Note 1 range				
condition condition		Ês/lot	E-UTRA operating band groups Note 3	Minimum Io		Maximum lo	
dB	dB	dB		dBm/15kHz Note	dBm/BW _{Channel}	dBm/BW _{Channel}	
			FDD_A, TDD_A	-121	N/A	-70	
			FDD_B	-120.5	N/A	-70	
		≥0 dB	FDD_C, TDD_C	-120	N/A	-70	
			FDD_D	-119.5	N/A	-70	
±4.5	±9		FDD_E, TDD_E	-119	N/A	-70	
			FDD_F	-118.5	N/A	-70	
			FDD_G	-118	N/A	-70	
			FDD_H	-117.5	N/A	-70	
			FDD_N	-114.5	N/A	-70	
±8	±11	≥0 dB	FDD_A, TDD_A, FDD B, FDD_C, TDD_C, FDD_D, FDD_E, TDD_E, FDD_F, FDD_G, FDD_H, FDD_N	N/A	-70	-50	

NOTE 1: Io is assumed to have constant EPRE across the bandwidth.

NOTE 2: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

9.1.14.3.2.2 Relative CSI-RSRP measurement requirements

In this section, the relative CSI-RSRP measurement is defined as the CSI-RSRP measured from one cell or TP compared to the CSI-RSRP measured on a different frequency from another cell or from another TP.

The accuracy requirements in Table 9.1.14.3.2.2-1 are valid under the following conditions:

CSI reference signals in discovery signal occasions are transmitted on one antenna port only from each TP.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

CSI-RSRP is specified in Annex B.3.17 for a corresponding Band.

$$\left| CSI _RSRP1 \right|_{dBm} - CSI _RSRP2 \Big|_{dBm} \right| \le 27 dB$$

| Channel 1_Io -Channel 2_Io | ≤ 20 dB

Accı	ıracy	Conditions					
Name Estromo		CSI	lo Note 1 range				
Normal condition	Extreme condition	Ês/lot Note 2	E-UTRA operating band groups Note 4	Minimum Io			
dB	dB	dB		dBm/15kHz Note 3	dBm/BW _{Channel}		
			FDD_A, TDD_A	-121	-50		
			FDD_B	-120.5	-50		
			FDD_C, TDD_C	-120	-50		
			FDD_D	-119.5	-50		
±4.5	±6	≥0 dB	FDD_E, TDD_E	-119	-50		
			FDD_F	-118.5 -	-50		
			FDD_G	-118	-50		
			FDD_H	-117.5	-50		
	l		בטט או	1115	-50 -50 -50 -50 -50 -50		

Table 9.1.14.3.2.2-1: Inter-frequency relative CSI-RSRP measurement accuracy

- NOTE 1: Io is assumed to have constant EPRE across the bandwidth.
- NOTE 2: The parameter CSI Ês/lot is the minimum CSI Ês/lot of the pair of cells or TPs to which the requirement applies.
- NOTE 3: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.
- NOTE 4: E-UTRA operating band groups are as defined in Section 3.5.

9.1.14.3.3 CSI-RSRP measurement report mapping

The reporting range of CSI-RSRP is defined from -140 dBm to -44 dBm with 1 dB resolution.

The mapping of measured quantity is defined in Table 9.1.14.3.3-1. The range in the signalling may be larger than the guaranteed accuracy range.

Reported value	Measured quantity value	Unit
CSI_RSRP_00	CSI_RSRP < -140	dBm
CSI_RSRP _01	-140 ≤ CSI_RSRP < -139	dBm
CSI_RSRP _02	-139 ≤ CSI_RSRP < -138	dBm
•••		
CSI_RSRP _95	-46 ≤ CSI_RSRP < -45	dBm
CSI_RSRP _96	-45 ≤ CSI_RSRP < -44	dBm
CSI_RSRP _97	-44 ≤ CSI_RSRP	dBm

Table 9.1.14.3.3-1: CSI-RSRP measurement report mapping

9.1.14.4 RSRQ measurements in discovery signal occasions

Intra-frequency absolute RSRQ measurement accuracy requirements in discovery signal occasions are the same as specified in Section 9.1.5.1.

Inter-frequency absolute RSRQ measurement accuracy requirements in discovery signal occasions are the same as specified in Section 9.1.6.1.

Inter-frequency relative RSRQ measurement accuracy requirements in discovery signal occasions are the same as specified in Section 9.1.6.2.

Measurement report mapping for RSRQ measurements in discovery signal occasions are the same as specified in Section 9.1.7.

9.1.15 Discovery signal measurements accuracy for E-UTRAN carrier aggregation

This clause contains requirements on UE capabilities for support of E-UTRA FDD, TDD and TDD-FDD carrier aggregation when discovery signal [16] is configured. Requirements in this clause are applicable to all carrier aggregation capable UEs which have been configured with up to four downlink SCell(s). Note: This clause covers measurement accuracy requirements for frequencies corresponding to those used for the PCell and SCell(s).

Measurements of any other frequency are considered to be inter-frequency measurements covered by the accuracy requirements in clause 9.1.14.

The requirements in this clause apply for bandwidths defined in the bandwidth combination set for the CA configurations supported by the UE [5].

9.1.15.1 Requirements for CRS based discovery signal measurements accuracy for E-UTRAN carrier aggregation

9.1.15.1.1 Primary component carrier accuracy requirement

RSRP and RSRQ measurements of cells on the primary component carrier shall meet the intrafrequency absolute accuracy requirements in sections 9.1.14.2 and 9.1.14.4. Comparisons between RSRP of cells on the primary component carrier shall also meet the intra-frequency relative accuracy requirements in sections 9.1.14.2.

9.1.15.1.2 Secondary component carrier accuracy requirement

RSRP and RSRQ measurements of cells on any of the secondary component carrier(s) shall meet the intrafrequency absolute accuracy requirements in sections 9.1.14.2 and 9.1.14.4. Comparisons between RSRP of cells on the same secondary component carrier shall meet the intra-frequency relative accuracy requirements in sections 9.1.14.2.

9.1.15.1.3 Primary and secondary component carrier relative accuracy requirement

When measurements of cells on the primary component carrier are compared with measurements of cells on any of the secondary component carrier(s), the applicable relative accuracy requirements are the RSRP and RSRQ inter-frequency accuracy requirements in sections 9.1.14.2 and 9.1.14.4.

9.1.15.1.4 Secondary component carrier relative accuracy requirement

When measurements of cells on any of the secondary component carrier(s) are compared with measurements of cells on the other secondary component carrier, the applicable relative accuracy requirements are the RSRP and RSRQ interfrequency accuracy requirements in sections 9.1.14.2 and 9.1.14.4.

9.1.15.2 Requirements for CSI-RS based discovery signal measurements accuracy for E-UTRAN carrier aggregation

9.1.15.2.1 Primary component carrier accuracy requirement

RSRP measurements of cells on the primary component carrier shall meet the intrafrequency absolute accuracy requirements in sections 9.1.14.3.1.1. Comparisons between RSRP of cells on the primary component carrier shall also meet the intra-frequency relative accuracy requirements in sections 9.1.14.3.1.2.

9.1.15.2.2 Secondary component carrier accuracy requirement

RSRP measurements of cells on any of the secondary component carrier(s) shall meet the intrafrequency absolute accuracy requirements in sections 9.1.14.3.1.1. Comparisons between RSRP of cells on the same secondary component carrier shall meet the intra-frequency relative accuracy requirements in sections 9.1.14.3.1.2.

9.1.15.2.3 Primary and secondary component carrier relative accuracy requirement

When measurements of cells on the primary component carrier are compared with measurements of cells on any of the secondary component carrier(s), the applicable relative accuracy requirements are the RSRP inter-frequency accuracy requirements in sections 9.1.14.3.2.2.

9.1.15.2.4 Secondary component carrier relative accuracy requirement

When measurements of cells on any of the secondary component carrier(s) are compared with measurements of cells on the other secondary component carrier, the applicable relative accuracy requirements are the RSRP inter-frequency accuracy requirements in sections 9.1.14.3.2.2.

9.1.16 Accuracy requirements for RSRQ measurement on all OFDM symbols

This clause contains requirements for RSRQ measurement when measurement configuration message received by the UE contains *measRSRQ-OnAllSymbols-r12* parameter in TS 36.331 [2].

Intra-frequency absolute RSRQ measurement accuracy requirements when measured on all OFDM symbols are the same as specified in Section 9.1.5.1.

Inter-frequency absolute RSRQ measurement accuracy requirements when measured on all OFDM symbols are the same as specified in Section 9.1.6.1.

Inter-frequency relative RSRQ measurement accuracy requirements when measured on all OFDM symbols are the same as specified in Section 9.1.6.2.

NOTE: The minimum Io condition in Table 9.1.5.1-1, Table 9.1.6.1-1 and Table 9.1.6.2-1 is expressed as the average Io per RE over all REs in that symbol.

NOTE: The Io range defined by the minimum and the maximum Io levels in Table 9.1.5.1-1, Table 9.1.6.1-1 and Table 9.1.6.2-1 applies to CRS and non-CRS symbols. Io may be different in different symbols within a subframe.

NOTE: Iot in Table 9.1.5.1-1, Table 9.1.6.1-1 and Table 9.1.6.2-1 is the received power spectrum density of total interference and noise averaged over CRS REs.

Intra-frequency absolute WB-RSRQ measurement accuracy requirements when measured on all OFDM symbols are the same as specified in Section 9.1.5.4.

Inter-frequency absolute WB-RSRQ measurement accuracy requirements when measured on all OFDM symbols are the same as specified in Section 9.1.6.3.

Inter-frequency relative WB-RSRQ measurement accuracy requirements when measured on all OFDM symbols are the same as specified in Section 9.1.6.4.

NOTE: The minimum Io condition in Table 9.1.5.4-1, Table 9.1.6.3-1 and Table 9.1.6.4-1 is expressed as the average Io per RE over all REs in that symbol across all the resource blocks within the *AllowedMeasBandwidth* in TS 36.331 [2].

NOTE: The Io1, Io2 and Io range defined by the minimum and the maximum Io levels in Table 9.1.5.4-1, Table 9.1.6.3-1 and Table 9.1.6.4-1 applies to CRS and non-CRS symbols. Io1, Io2 and Io may be different in different symbols within a subframe.

NOTE: Iot in Table 9.1.5.4-1, Table 9.1.6.3-1 and Table 9.1.6.4-1 is the received power spectrum density of total interference and noise averaged over CRS REs.

9.1.17 RS-SINR Measurements

9.1.17.1 Measurement Report Mapping

The reporting range of RS-SINR measurement is defined from -23 dB to 40 dB with 0.5 dB resolution.

The mapping of the measured quantity is defined in table 9.1.17.3-1. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.1.17.1-1: RS-SINR measurement report mapping

Reported Value	Measured Quantity Value	Unit
RS-SINR_000	RS-SINR < -23	dB
RS-SINR_001	-23 ≤ RS-SINR < -22.5	dB

RS-SINR_126	39.5 ≤ RS-SINR < 40	dB
RS-SINR_127	40 ≤ RS-SINR	dB

9.1.17.2 Intra-frequency RS-SINR Measurement Accuracy Requirements

9.1.17.2.1 Absolute RS-SINR Measurement Accuracy Requirements

The requirements for absolute accuracy of intra-frequency RS-SINR in this clause apply to a cell on the same frequency as that of the serving cell.

The accuracy requirements in Table 9.1.17.2.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP|dBm according to Annex B.3.18 for a corresponding Band.

Table 9.1.17.2.1-1: Intra-frequency RS-SINR absolute accuracy

Accı	Accuracy		Conditions				
Normal	Evtromo		lo Note 1 range				
Normal Extreme condition		Ês/lot	E-UTRA operating band groups Note 4	Minimum Io	Maximum lo		
dB	dB	dB		dBm/15kHz Note 3	dBm/BW _{Channel}		
			FDD_A, TDD_A	-121	-50		
			FDD_C, TDD_C	-120	-50 -50		
			FDD_D	-119.5	-50		
±TBD	±TBD	≥-3 dB	FDD_E, TDD_E	-119	dBm/BW _{Channe} -50 -50		
TIBD	ΣΙΒυ	≥-3 UD	FDD_F	-118.5			
			FDD_G	-118	-50		
			FDD_H	-117.5	-50		
			FDD_N	-114.5	-50		
±TBD	±TBD	≥-6 dB	Note 2	Note 2	Note 2		

NOTE 1: Io is assumed to have constant EPRE across the bandwidth.

NOTE 2: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.

NOTE 3: The condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 4: E-UTRA operating band groups are as defined in Section 3.5.

9.1.17.3 Inter-frequency RS-SINR Measurement Accuracy Requirements

9.1.17.3.1 Absolute RS-SINR Measurement Accuracy Requirements

The requirements for absolute accuracy of inter-frequency RS-SINR in this clause apply to a cell on the same frequency as that of the serving cell.

The accuracy requirements in Table 9.1.17.3-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP|dBm according to Annex B.3.19 for a corresponding Band.

Table 9.1.17.3.1-1: Inter-frequency RS-SINR absolute accuracy

Accı	Accuracy		Conditions				
Normal Estromo			Io Note 1 range				
Normal condition	Extreme condition	Ês/lot	E-UTRA operating band groups Note 4	Minimum Io	Maximum lo		
dB	dB	dB		dBm/15kHz Note 3	dBm/BW _{Channel}		
			FDD_A, TDD_A	-121	-50		
			FDD_C, TDD_C	-120	-50		
			FDD_D	-119.5	-50		
±TBD	+TBD	≥-3 dB	FDD_E, TDD_E	-119	-50 -50 -50 -50 -50 -50 -50 -50 -50		
TIDD	ΣΙΒυ	≥-3 UD	FDD_F	-118.5			
			FDD_G	-118	-50		
			FDD_H	-117.5	-50		
		Ï	FDD_N	-114.5	-50		
±TBD	±TBD	≥-6 dB	Note 2	Note 2	Note 2		

NOTE 1: Io is assumed to have constant EPRE across the bandwidth.

NOTE 2: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.

NOTE 3: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 4: E-UTRA operating band groups are as defined in Section 3.5.

9.1.17.3.2 Relative RS-SINR Measurement Accuracy Requirements

The relative accuracy of inter-frequency RS-SINR in this clause is defined as the RS-SINR measured from one cell compared to the RS-SINR measured from another cell on a different frequency.

The accuracy requirements in Table 9.1.17.3.2-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

RSRP1,2|_{dBm} according to Annex B.3.20 for a corresponding Band.

$$\left| RSRP1 \right|_{dBm} - RSRP2 \Big|_{dBm} \right| \le 27 dB$$

| Channel 1_Io - Channel 2_Io | ≤ 20 dB

Table 9.1.17.3.2-1: Inter-frequency RS-SINR relative accuracy

Accuracy		Conditions				
Normal	Extreme	Ês/lot Note	lo ^{Note 1} range			
condition	condition	ES/IOT	E-UTRA operating band groups Note 5	Minimum Io	Maximum Io	
dB	dB	dB		dBm/15kHz Note 4	dBm/BW _{Channel}	
			FDD_A, TDD_A	-121	-50	
			FDD_C, TDD_C	-121 -50 -120 -50 -119.5 -50		
			FDD_D	-119.5	-120 -50 -119.5 -50 -119 -50	
±TBD	±TBD	≥-3 dB	FDD_E, TDD_E	-119		
TIDD	ΣΙΒυ	≥-3 ub	FDD_F	-118.5	-50	
			FDD_G	-118	-50	
			FDD_H	-117.5	-50	
			FDD_N	-114.5	-50	
±TBD	±TBD	≥-6 dB	Note 3	Note 3	Note 3	

NOTE 1: Io is assumed to have constant EPRE across the bandwidth.

NOTE 2: The parameter Ês/lot is the minimum Ês/lot of the pair of cells to which the requirement applies.

NOTE 3: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.

NOTE 4: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 5: E-UTRA operating band groups are as defined in Section 3.5.

9.1.18 Accuracy Requirements for Measurements under Operation with Frame Structure 3

9.1.18.1 Introduction

The accuracy requirements in this section are defined for the following physical layer measurements: RSRP, RSRQ, CSI-RSRP, and RSSI, where the measurements are performed on cells of E-UTRA carriers during the configured DMTC occasion [2] under operation with frame structure 3 [16].

9.1.18.2 RSRP measurements

9.1.18.2.1 RSRP measurement report mapping

The measurement report mapping for RSRP measurements is as defined in Section 9.1.4.

- 9.1.18.2.2 Inter-frequency absolute RSRP measurement accuracy requirements Editor's node: requirements are TBD.
- 9.1.18.2.3 Inter-frequency relative RSRP measurement accuracy requirements

 NOTE: These requirements are applicable only for CA under operation with frame structure 3 [16].

 Editor's node: requirements are TBD.
- 9.1.18.2.4 Intra-frequency absolute RSRP measurement accuracy requirementsNOTE: These requirements are applicable only for CA under operation with frame structure 3 [16].Editor's node: requirements are TBD.
- 9.1.18.2.5 Intra-frequency relative RSRP measurement accuracy requirementsNOTE: These requirements are applicable only for CA under operation with frame structure 3 [16].Editor's node: requirements are TBD.

9.1.18.3 RSRQ measurements

9.1.18.3.1 RSRQ measurement report mapping

The measurement report mapping for RSRQ measurements is as defined in Section 9.1.7.

- 9.1.18.3.2 Inter-frequency absolute RSRQ measurement accuracy requirements Editor's node: requirements are TBD.
- 9.1.18.3.3 Inter-frequency relative RSRQ measurement accuracy requirementsNOTE: These requirements are applicable only for CA under operation with frame structure 3 [16].Editor's node: requirements are TBD.
- 9.1.18.3.4 Intra-frequency absolute RSRQ measurement accuracy requirements NOTE: These requirements are applicable only for CA under operation with frame structure 3 [16]. Editor's node: requirements are TBD.

9.1.18.4 CSI-RSRP measurements

9.1.18.4.1 CSI-RSRP measurement report mapping

The measurement report mapping for CSI-RSRP measurements is as defined in Section 9.1.14.3.3.

9.1.18.4.2 Inter-frequency absolute CSI-RSRP measurement accuracy requirements Editor's node: requirements are TBD.

9.1.18.4.3 Inter-frequency relative CSI-RSRP measurement accuracy requirements

NOTE: These requirements are applicable only for CA under operation with frame structure 3 [16]. Editor's node: requirements are TBD.

9.1.18.4.4 Intra-frequency absolute CSI-RSRP measurement accuracy requirements

NOTE: These requirements are applicable only for CA under operation with frame structure 3 [16]. Editor's node: requirements are TBD.

9.1.18.4.5 Intra-frequency relative CSI-RSRP measurement accuracy requirements

NOTE: These requirements are applicable only for CA under operation with frame structure 3 [16]. Editor's node: requirements are TBD.

9.1.18.5 RSSI measurements

9.1.18.5.1 RSSI measurement report mapping

The reporting range of RSSI measurement is defined from -100 dBm to -25 dBm with 1 dBm resolution.

The mapping of the measured quantity is defined in table 9.1.18.5.1-1. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.1.18.5.1-1: RSSI measurement report mapping

Reported value	Measured quantity value	Unit
RSSI_00	RSSI < -100	dBm
RSSI_01	-100 ≤ RSSI < -99	dBm
RSSI_02	-99 ≤ RSSI < -98	dBm

RSSI_74	-27 ≤ RSSI < -26	dBm
RSSI_75	-26 ≤ RSSI < -25	dBm
RSSI_76	-25 ≤ RSSI	dBm

9.1.18.5.2 Intra-frequency absolute RSSI measurement accuracy requirements

NOTE: These requirements are applicable only for CA under operation with frame structure 3 [16]. The intra-frequency RSSI requirements are specified in Table 9.1.18.5.2-1.

Accı	uracy	Conditions				
Normal	Extreme	lo Note 1 range				
condition	condition	E-UTRA operating band groups ^{Note 4}	Minimum Io	Maximum Io		
dB	dB		dBm/15kHz Note 3	dBm/BW _{Channel}		
		FDD_A, TDD_A	-121	-50		
		FDD_C, TDD_C	-120	-50		
		FDD_D	-119.5	-50		
[10.5]	[15 5]	FDD_E, TDD_E	-119	-50		
[±2.5]	[±5.5]	FDD_F	-118.5	-50		
		FDD_G	-118	-50		
		FDD_H	-117.5	-50		
		FDD_N	-114.5	-50		
[±4.5]	[±7.5]	Note 2	Note 2	Note 2		

Table 9.1.18.5.2-1: Intra-frequency RSSI accuracy

NOTE 1: Io is assumed to have constant EPRE across the bandwidth.

9.1.18.5.3 Inter-frequency absolute RSSI measurement accuracy requirements

The inter-frequency RSSI requirements are the same as specified in Section 9.1.18.5.2.

9.1.19 Accuracy Requirements for Carrier Aggregation for Measurements under Operation with Frame Structure 3

9.1.19.1 Introduction

The accuracy requirements in this section are defined for the following physical layer measurements: RSRP, RSRQ, CSI-RSRP, and RSSI, where the measurements are performed on cells of E-UTRA carriers during the configured DMTC occasion [2] under operation with frame structure 3 [16].

9.1.19.2 Accuracy requirements for measurements on SCC

The requirements in this section are for the measurements on cells of E-UTRA carriers operated under frame structure 3 on one SCC.

Absolute RSRP measurements of cells on SCC shall meet the intra-frequency absolute accuracy requirements in Section 9.1.18.2.4.

Comparisons between RSRP measurements of cells on the same SCC shall meet the intra-frequency relative accuracy requirements in Section 9.1.18.2.5.

Absolute RSRQ measurements of cells on SCC shall meet the intra-frequency absolute accuracy requirements in Section 9.1.18.3.4.

CSI-RSRP measurements of cells on SCC shall meet the intra-frequency absolute accuracy requirements in Section 9.1.18.4.4.

Comparisons between CSI-RSRP measurements of cells on the same SCC shall meet the intra-frequency relative accuracy requirements in Section 9.1.18.4.5.

RSSI measurements on SCC shall meet the intra-frequency absolute accuracy requirements in Section 9.1.18.5.3.

NOTE 2: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.

NOTE 3: The condition level is increased by $\Delta > 0$, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 4: E-UTRA operating band groups are as defined in Section 3.5.

9.1.19.3 Relative accuracy requirements for measurements on different SCCs

The requirements in this section are for the measurements on cells of E-UTRA carriers operated under frame structure 3 on two different SCCs.

When RSRP measurements of cells on any of the SCC are compared with RSRP measurements of cells on the other SCC, the applicable relative accuracy requirements are the inter-frequency relative RSRP measurement accuracy requirements in Section 9.1.18.2.3.

When RSRQ measurements of cells on any of the SCC are compared with RSRQ measurements of cells on the other SCC, the applicable relative accuracy requirements are the inter-frequency relative RSRQ measurement accuracy requirements in Section 9.1.18.3.3.

When CSI-RSRP measurements of cells on any of the SCC are compared with CSI-RSRP measurements of cells on the other SCC, the applicable relative accuracy requirements are the inter-frequency relative CSI-RSRP measurement accuracy requirements in Section 9.1.18.4.3.

9.1.20 SFN and Subframe Time Difference (SSTD)

9.1.20.1 SSTD Accuracy Requirement

The SFN and subframe time difference (SSTD) is measured between MeNB and SeNB.

The accuracy requirements in Table 9.1.20.1-1 are valid under the following conditions:

Cell specific reference signals are transmitted either from one, two or four antenna ports.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

No changes to the uplink transmission timing are applied during the measurement period.

RSRP_{dBm} according to Annex B.3.5 for a corresponding Band

Table 9.1.20.1-1: SFN and subframe time difference measurement accuracy

	Conditions							
		MIN(PCell downlink		lo Note 1 range				
Accuracy	Ês/lot	transmission Bandwidth, PSCell downlink transmission Bandwidth)	E-UTRA operating band groups Note 6	Minimum Io	Maximum lo			
Ts Note 2	dB	MHz		dBm/15kHz Note 5	dBm/BW _{Channel}			
			FDD_A, TDD_A	-121	-50			
			FDD_C, TDD_C	-120	-50			
			FDD_D	-119.5	-50			
[TBD]	≥-3 dB	≥1.4 MHz	FDD_E, TDD_E	-119	-50			
נטסון	≥-3 UD	21.4 WITZ	FDD_F	-118.5	-50			
			FDD_G Note 4	-118	-50			
			FDD_H	-117.5	-50			
			FDD_N	-114.5	-50			
[TBD]	≥-3 dB	≥ 3 MHz	Note 3	Note 3	Note 3			

NOTE 1: When in dBm/15kHz, the minimum lo condition is expressed as the average lo per RE over all REs in that symbol. Io may be different in different symbols within a subframe.

9.1.20.2 SSTD Measurement Report Mapping

SFN and subframe timing difference (SSTD) measurement report comprises 3 elements:

NOTE 2: Ts is the basic timing unit defined in TS 36.211.

NOTE 3: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding requirement with downlink bandwidth ≥1.4 MHz.

NOTE 4: Except Band 29 and Band 32.

NOTE 5: The condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 6: E-UTRA operating band groups are as defined in Section 3.5.

 T_s

SFN offset between MeNB and SeNB (ΔX)

Reporting range of ΔX is between frame number # 0 to frame number # 1023 as defined in TS 36.331 [2].

Frame boundary offset between MeNB and SeNB (ΔY)

Reporting range of ΔY is between subfrane number #-4 and subframe number # 5 as defined in TS 36.331 [2].

Subframe boundary offset between MeNB and SeNB (ΔZ)

The reporting range of absolute value of ΔZ is between 700Ts and 1320Ts with reporting granularity of 10Ts.

The mapping of measured Subframe boundary offset (ΔZ) is defined in Table 9.1.20.2-1.

Reported Value **Measured Quantity Value** Unit SUBFRAME_BOUNDARY_OFFSET_00 $abs(\Delta Z) \leq 700$ T, SUBFRAME BOUNDARY_OFFSET_01 $700 < abs(\Delta Z) \le 710$ T. SUBFRAME BOUNDARY OFFSET 02 $710 < abs(\Delta Z) \le 720$ T_s SUBFRAME BOUNDARY_OFFSET_61 1300 < abs(Δ Z) ≤ 1310 Ts SUBFRAME_BOUNDARY_OFFSET_62 1310 < abs(Δ Z) ≤ 1320 T_s SUBFRAME_BOUNDARY_OFFSET_63

Table 9.1.20.2-1: SSTD report mapping

 $1320 < abs(\Delta Z)$

9.2 UTRAN FDD Measurements

The requirements in this clause are applicable for a UE:

- in state RRC_CONNECTED
- performing measurements according to clause 8.1.2.4 with appropriate measurement gaps
- that is synchronised to the cell that is measured.

The reported measurement result after layer 1 filtering shall be an estimate of the average value of the measured quantity over the measurement period. The reference point for the measurement result after layer 1 filtering is referred to as point B in the measurement model described in TS 25.302 [6].

The accuracy requirements in this clause are valid for the reported measurement result after layer 1 filtering. The accuracy requirements are verified from the measurement report at point D in the measurement model having the layer 3 filtering disabled.

921 UTRAN FDD CPICH RSCP

NOTE: This measurement is for handover between E-UTRAN and UTRAN FDD and for SON.

The requirements in this clause are valid for terminals supporting this capability.

The measurement period for RRC_CONNECTED state is specified in clauses 8.1.2.4.1 and 8.1.2.4.2.

In RRC_CONNECTED state the accuracy requirements shall meet the absolute accuracy requirements in table 9.2.1-1, under the following conditions:

- CPICH Ec/Io condition for a detectable cell is as specified in clauses 8.1.2.4.1, 8.1.2.4.2, 8.1.2.4.7, 8.1.2.4.8;
- SCH Ec/Io condition for a detectable cell is as specified in clauses 8.1.2.4.1, 8.1.2.4.2, 8.1.2.4.7, 8.1.2.4.8.

Accuracy		Conditions			
Normal	Extreme	lo r	ange		
condition	condition	UTRA operating bands	Minimum Io	Maximum Io	
dB	dB		dBm/3.84 MHz	dBm/3.84 MHz	
		Band I, IV, VI, X XI, XIX and XXI	-94	-70	
		Band IX	-93	-70	
±6	±9	Band II, V and VII	-92	-70	
±θ	±9	Band III, VIII, XII, XIII, XIV , XX and XXII	-91	-70	
		Band XXV, XXVI Note 1	-90.5	-70	
±8	±11	Note 2	-70	-50	

Table 9.2.1-1: UTRAN FDD CPICH_RSCP absolute accuracy

NOTE 1: For Band XXVI, the condition has the minimum lo of -92 dBm/3.84 MHz when the carrier frequency of the assigned UTRA channel is within 869-894 MHz for the UE which supports both Band V and Band XXVI operating frequencies.

NOTE 2: The same bands apply for this requirement as for the corresponding highest accuracy requirement.

If the UE, in RRC_CONNECTED state, needs measurement gaps to perform UTRAN FDD measurements, the relevant UTRAN FDD measurement procedure and measurement gap pattern stated in clause 8.1.2.4 shall apply.

The reporting range and mapping specified for FDD CPICH RSCP in TS 25.133 [18] shall apply.

9.2.2 Void

9.2.3 UTRAN FDD CPICH Ec/No

NOTE: This measurement is for handover between E-UTRAN and UTRAN FDD and for SON.

The requirements in this clause are valid for terminals supporting this capability.

The measurement period for RRC CONNECTED state is specified in clauses 8.1.2.4.1 and 8.1.2.4.2.

In RRC_CONNECTED state the accuracy requirements shall be the same as the inter-frequency measurement accuracy requirements for FDD CPICH Ec/No in TS 25.133 [18].

If the UE, in RRC_CONNECTED state, needs measurement gaps to perform UTRAN FDD measurements, the UTRAN FDD measurement procedure and measurement gap pattern stated in clause 8.1.2.4.1 shall apply.

The reporting range and mapping specified for FDD CPICH Ec/No in TS 25.133 [18] shall apply.

9.3 UTRAN TDD Measurements

The requirements in this clause are applicable for a UE:

- in state RRC CONNECTED
- performing measurements according to clause 8.1.2.4 with appropriate measurement gaps
- that is synchronised to the cell that is measured.

The reported measurement result after layer 1 filtering shall be an estimate of the average value of the measured quantity over the measurement period. The reference point for the measurement result after layer 1 filtering is referred to as point B in the measurement model described in TS 25.302 [6].

The accuracy requirements in this clause are valid for the reported measurement result after layer 1 filtering. The accuracy requirements are verified from the measurement report at point D in the measurement model having the layer 3 filtering disabled.

9.3.1 UTRAN TDD P-CCPCH RSCP

NOTE: This measurement is for handover between E-UTRAN and UTRAN TDD and for SON.

The requirements in this clause are valid for terminals supporting this capability.

The measurement period for RRC_CONNECTED state is specified in clauses 8.1.2.4.3 and 8.1.2.4.4.

In RRC_CONNECTED state the accuracy requirements shall be the same as the inter-frequency measurement accuracy requirements for TDD P-CCPCH in TS 25.123 [19].

If the UE, in RRC_CONNECTED state, needs measurement gaps to perform UTRAN TDD measurements, the relevant UTRAN TDD measurement procedure and measurement gap pattern stated in clause 8.1.2.4 shall apply.

The reporting range and mapping specified for TDD P-CCPCH RSCP in TS 25.123 [19] shall apply.

9.3.2 Void

9.3.3 Void

9.4 GSM Measurements

The requirements in this clause are applicable for a UE:

- in state RRC CONNECTED
- performing measurements according to clause 8.1.2.4.5 with appropriate measurement gaps
- that is synchronised to the cell that is measured.

The reported measurement result after layer 1 filtering shall be an estimate of the average value of the measured quantity over the measurement period. The reference point for the measurement result after layer 1 filtering is referred to as point B in the measurement model described in TS 25.302 [6].

The accuracy requirements in this clause are valid for the reported measurement result after layer 1 filtering. The accuracy requirements are verified from the measurement report at point D in the measurement model having the layer 3 filtering disabled.

9.4.1 GSM carrier RSSI

NOTE: This measurement is for handover between E-UTRAN and GSM.

The requirements in this clause are valid for terminals supporting this capability.

The measurement period for RRC_CONNECTED state is specified in clause 8.1.2.4.5.

In RRC_CONNECTED state the measurement accuracy requirements for RXLEV in TS 45.008 [8] shall apply.

If the UE, in RRC_CONNECED state, needs measurement gaps to perform GSM measurements, the GSM measurement procedure and measurement gap pattern stated in clause 8.1.2.4.5 shall apply.

The reporting range and mapping specified for RXLEV in TS 45.008 [8] shall apply.

9.5 CDMA2000 1x RTT Measurements

The requirements in this clause are applicable for a UE:

- in RRC_CONNECTED state.
- synchronised to the cell that is measured.

9.5.1 CDMA2000 1x RTT Pilot Strength

NOTE: This measurement is for handover between E-UTRAN and cdma2000 1 x RTT.

The requirements in this clause are valid for terminals supporting this capability.

CDMA2000 1xRTT Pilot Strength defined in sub-clause 5.1.10 of [4] shall meet the performance requirement defined in sub-clause 3.2.4 of [14] on the cdma2000 1xRTT neighbour cells indicated by the serving eNode B.

$P_{CMAX,c}$

For a UE configured with a secondary cell, the UE is required to report the UE configured maximum output power $(P_{CMAX,c})$ together with the power headroom. This clause defines the requirements for the $P_{CMAX,c}$ reporting.

9.6.1 Report Mapping

The $P_{CMAX,c}$ reporting range is defined from -29dBm to 33 dBm with 1 dB resolution. Table 9.6.1-1 defines the reporting mapping.

Reported value Measured quantity value Unit PCMAX_C_00 $P_{CMAX,c} < -29$ dBm PCMAX_C_01 $-29 \le P_{CMAX,c} < -28$ dBm PCMAX C 02 $-28 \le P_{CMAX,c} < -27$ dBm PCMAX_C_61 $31 \le P_{CMAX,c} < 32$ dBm PCMAX_C_62 $32 \le P_{CMAX,c} < 33$ dBm $\overline{33} \leq P_{CMAX}$ PCMAX C 63 dBm

Table 9.6.1-1 Mapping of P_{CMAX,c}

9.6.2 Estimation Period

When *extendedPHR* is configured and UE is required to include $P_{CMAX,c}$ in Extended PHR MAC control element as defined in subclause 5.4.6 in [17], the UE shall calculate the $P_{CMAX,c}$ per activated serving cell c for UL-SCH transmission according to subclause 6.2.5A of TS 36.101 [5] over 1 subframe.

9.6.3 Reporting Delay

The $P_{CMAX,c}$ reporting delay is defined as the time between the beginning of the $P_{CMAX,c}$ reference period and the time when the UE starts transmitting $P_{CMAX,c}$ over the radio interface. The reporting delay of the $P_{CMAX,c}$ shall be 0 ms, which is applicable for all configured triggering mechanisms for $P_{CMAX,c}$ reporting.

9.7 IEEE802.11 Measurements

The requirements in this clause are applicable for a UE:

- in RRC_CONNECTED state.
- synchronised to the IEEE 802.11 access point that is measured.

9.7.1 IEEE802.11 Beacon RSSI

NOTE: This measurement is for access network selection and traffic steering between E-UTRAN and IEEE802.11.

The requirements in this clause are valid for terminals supporting this capability.

IEEE802.11 Beacon RSSI defined in sub-clause 5.1.16 of [4] shall meet the performance requirement defined in [32].

9.8 MBSFN Measurements

9.8.1 Introduction

MBSFN measurements include MBSFN RSRP, MBSFN RSRQ, and MCH BLER, which are defined in [4]. The measurements are used for MDT.

9.8.2 MBSFN RSRP

9.8.2.1 Absolute MBSFN RSRP measurement accuracy requirements

The requirements for absolute accuracy of MBSFN RSRP in this clause apply to any carrier, which may be the same as or different from any serving unicast carrier, where PMCH is received while meeting performance requirements in Section 10 of [5].

The accuracy requirements in Table 9.8.2.1-1 are valid under the following conditions:

MBSFN RS are transmitted from antenna port 4 in the MBSFN subframes where PMCH is received.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

MBSFN RSRP|dBm/15kHz is the same as RSRP|dBm/15kHz specified in Annex B.3.1 for each corresponding Band.

Table 9.8.2.1-1: Absolute MBSFN RSRP measurement accuracy

Accuracy			Conditions				
Normal	Extreme		lo Note 1 range				
condition	condition	Ês/lot	E-UTRA operating band groups Note 3	Minin	num lo	Maximum Io	
dB	dB	dB		dBm/15kHz Note 2	dBm/BW _{Channel}	dBm/BW _{Channel}	
			FDD_A, TDD_A	-121	N/A	-70	
		≥-6 dB	FDD_B	-120.5	N/A	-70	
			FDD_C, TDD_C	-120	N/A	-70	
			FDD_D	-119.5	N/A	-70	
±4.5	±9		FDD_E, TDD_E	-119	N/A	-70	
			FDD_F	-118.5	N/A	-70	
			FDD_G	-118	N/A	-70	
			FDD_H	-117.5	N/A	-70	
			FDD_N	-114.5	N/A	-70	
±8	±11	≥-6 dB	FDD_A, TDD_A, FDD B, FDD_C, TDD_C, FDD_D, FDD_E, TDD_E, FDD_F, FDD_G, FDD_H, FDD_N	N/A	-70	-50	

NOTE 1: Io is assumed to have constant EPRE across the bandwidth.

NOTE 2: The condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

9.8.2.2 MBSFN RSRP measurement report mapping

The reporting range of MBSFN RSRP is defined from -140 dBm to -44 dBm with 1 dB resolution.

The mapping of measured quantity is defined in Table 9.8.2.2-1. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.8.2.2-1: MBSFN RSRP measurement report mapping

Reported value	Measured quantity value	Unit
MBSFN_RSRP_00	MBSFN_RSRP < -140	dBm
MBSFN_RSRP_01	-140 ≤ MBSFN_RSRP < -139	dBm
MBSFN_RSRP_02	-139 ≤ MBSFN_RSRP < -138	dBm
	•••	•••
MBSFN_RSRP_95	-46 ≤ MBSFN_RSRP < -45	dBm
MBSFN_RSRP_96	-45 ≤ MBSFN_RSRP < -44	dBm
MBSFN_RSRP_97	-44 ≤ MBSFN_RSRP	dBm

9.8.3 MBSFN RSRQ

9.8.3.1 Absolute MBSFN RSRQ measurement accuracy requirements

The requirements for absolute accuracy of MBSFN RSRQ in this clause apply to any carrier, which may be the same as or different from a serving unicast carrier, where PMCH is received while meeting performance requirements in Section 10 of [5].

The accuracy requirements in Table 9.8.3.1-1 are valid under the following conditions:

MBSFN RS are transmitted from antenna port 4 in the MBSFN subframes where PMCH is received.

Conditions defined in 36.101 Clause 7.3 for reference sensitivity are fulfilled.

MBSFN RSRP|dBm/15kHz is the same as RSRP|dBm/15kHz specified in Annex B.3.1 for each corresponding Band.

Table 9.8.3.1-1: Absolute MBSFN RSRQ measurement accuracy

Accuracy Normal Extreme			Conditions			
			Io Note 1 range			
Normal condition	condition	Ês/lot	E-UTRA operating band groups Note 4	Minimum Io	Maximum lo	
dB	dB	dB		dBm/15kHz Note 3	dBm/BW _{Channel}	
			FDD_A, TDD_A	-121	-50	
		FDD_B	-120.5	-50		
		FDD_C, TDD_C	-120	-50		
	FDD_D	-119.5	-50			
±2.5	±2.5 ±4 ≥-3 dE	≥-3 dB	FDD_E, TDD_E	-119	-50	
				FDD_F	-118.5	-50
		FDD_G	-118	-50		
		FDD_H	-117.5	-50		
			FDD_N	-114.5	-50	
±3.5	<u>±</u> 4	≥-6 dB	Note 2	Note 2	Note 2	

NOTE 1: Io is assumed to have constant EPRE across the bandwidth.

NOTE 2: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.

NOTE 3: The condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 4: E-UTRA operating band groups are as defined in Section 3.5.

9.8.3.2 MBSFN RSRQ measurement report mapping

The reporting range of MBSFN RSRQ is defined from -23 dB to -7.5 dB with 0.5 dB resolution.

The mapping of measured quantity is defined in Table 9.8.3.2-1. The range in the signalling may be larger than the guaranteed accuracy range.

Table 9.8.3.2-1: MBSFN RSRQ measurement report mapping

Reported value	Measured quantity value	Unit
MBSFN_RSRQ_00	MBSFN_RSRQ < -23	dB
MBSFN_RSRQ_01	-23 ≤ MBSFN_RSRQ < -22.5	dB
MBSFN_RSRQ_02	-22.5 ≤ MBSFN_RSRQ < -22	dB
		•••
MBSFN_RSRQ_30	-8.5 ≤ MBSFN_RSRQ < -8	dB
MBSFN_RSRQ_31	-8 ≤ MBSFN_RSRQ	dB

9.8.4 MCH BLER

MCH BLER shall be measured as defined in [4].

9.8.4.1 Measurement report mapping for MCH BLER

The UE shall report MCH BLER together with the corresponding total number of MCH blocks, which were received by the UE during the MCH BLER measurement period and used for calculating the reported MCH BLER.

The reporting range of MCH BLER is defined from 0.1% to 50% with uniform quantization in log domain.

The mapping of measured quantity is defined in Table 9.8.4.1-1. The range in the signalling may be larger than the range specified in the table below.

Table 9.8.4.1-1: MCH BLER measurement report mapping

Reported value	Measured quantity value	Unit
MCH BLER_00	MCH BLER < 0.1	%
MCH BLER_01	0.1≤ MCH BLER < 0.123	%
MCH BLER_02	0.123≤ MCH BLER < 0.151	%
MCH BLER_03	0.151≤ MCH BLER <0.186	%
MCH BLER_04	0.186≤ MCH BLER <0.229	%
MCH BLER_05	0.229≤ MCH BLER <0.282	%
MCH BLER_06	0. 282≤ MCH BLER <0.347	%
MCH BLER_07	0. 347≤ MCH BLER <0.426	%
MCH BLER_08	0. 426≤ MCH BLER <0.525	%
MCH BLER_09	0. 525≤ MCH BLER <0.645	%
MCH BLER_10	0. 645≤ MCH BLER <0.794	%
MCH BLER_11	0. 794≤ MCH BLER <0.976	%
MCH BLER_12	0. 976≤ MCH BLER <1.201	%
MCH BLER_13	1. 201≤ MCH BLER <1.478	%
MCH BLER_14	1. 478≤ MCH BLER <1.818	%
MCH BLER_15	1. 818≤ MCH BLER <2.236	%
MCH BLER_16	2. 236≤ MCH BLER <2.751	%
MCH BLER_17	2. 751≤ MCH BLER <3.384	%
MCH BLER_18	3. 384≤ MCH BLER <4.163	%
MCH BLER_19	4.163≤ MCH BLER <5.121	%
MCH BLER_20	5.121≤ MCH BLER <6.300	%
MCH BLER_21	6.300≤ MCH BLER <7.750	%
MCH BLER_22	7.750≤ MCH BLER <9.533	%
MCH BLER_23	9.533≤ MCH BLER <11.728	%
MCH BLER_24	11.728≤ MCH BLER <14.427	%
MCH BLER_25	14.427≤ MCH BLER <17.478	%
MCH BLER_26	17.478≤ MCH BLER <21.833	%
MCH BLER_27	21.833≤ MCH BLER <26.858	%
MCH BLER_28	26.858≤ MCH BLER <33.040	%
MCH BLER_29	33.040≤ MCH BLER <40.645	%
MCH BLER_30	40.645≤ MCH BLER < 50	%
MCH BLER_31	50 ≤ MCH BLER	%

9.8.4.2 Measurement report mapping for MCH Block Number

The reporting range of the total number of received MCH blocks during the measurement period is defined from 0 to 65152. The total number of received MCH blocks is quantized to two values n and m with the mappings defined in Table 9.8.4.2-1 and Table 9.8.4.2-2, respectively.

The range in the signalling may be larger than the range specified in the table below.

 N_R in Table 9.8.4.2-1 and Table 9.8.4.2-2 represents the total number of received MCH blocks. $f(N_R)$ is a function of N_R with the definition that $f\left(N_R\right) = \frac{N_R - \left(2^n - 1\right) \times 2^8}{2^n}$, from where the quantized total number of MCH blocks is found as $\left(2^n - 1\right) \times 2^8 + m \times 2^n$.

Table 9.8.4.2-1: Number of received MCH blocks mapping to n

Reported value, n	Number of received MCH blocks
MCH_NR_N_00	$0 \leq N_R < 256$
MCH_NR_N_01	256≤ N _R < 768
MCH_NR_N_02	768≤ N _R < 1792
MCH_NR_N_03	1792≤ N _R < 3840
MCH_NR_N_04	3840≤ N _R < 7936
MCH_NR_N_05	7936≤ N _R <16128
MCH_NR_N_06	16128≤ N _R < 32512
MCH_NR_N_07	32512≤ N _R

Table 9.8.4.2-2: Number of received MCH blocks mapping to m

Reported value, m	f(N _R)
MCH_NR_M_00	$0 \le f(N_R) < 1$
MCH_NR_M_01	$1 \le f(N_R) < 2$
MCH_NR_M_02	2≤ f(N _R) < 3
MCH_NR_M_253	$253 \le f(N_R) < 254$
MCH_NR_M_254	254≤ f(N _R) < 255
MCH_NR_M_255	255≤ f(N _R)

10 Measurements Performance Requirements for E-UTRAN

10.1 Received Interference Power

The measurement period shall be 100 ms.

10.1.1 Absolute accuracy requirement

Table 10.1.1-1: Received Interference Power absolute accuracy

Parameter	Unit	Accuracy	Conditions
		[dB]	lob [dBm/180 kHz]
lob	dBm/180 kHz	± 4	-117 - 96

10.1.2 Relative accuracy requirement

The relative accuracy is defined as the Received Interference Power measured at one frequency compared to the Received Interference Power measured from the same frequency at a different time.

Table 10.1.2-1: Received Interference Power relative accuracy

Parameter	Unit	Accuracy	Conditions
		[dB]	lob [dBm/180 kHz]
lob	dBm/180 kHz	± 0.5	-11796
			AND for changes ≤ ±9.0 dB

10.1.3 Received Interference Power measurement report mapping

The reporting range for Received Interference Power (RIP) is from -126 ... -75 dBm.

In table 10.2.3-1 the mapping of measured quantity is defined. The range in the signalling may be larger than the guaranteed accuracy range.

Table 10.1.3-1: Received Interference Power measurement reporting range

Reported value	Measured quantity value	Unit
RTWP_LEV _000	RIP < -126.0	dBm
RTWP_LEV _001	-126.0 ≤ RIP < -125.9	dBm
RTWP_LEV _002	-125.9 ≤ RIP < -125.8	dBm
RTWP_LEV _509	-75.2 ≤ RIP < -75.1	dBm
RTWP_LEV _510	-75.1 ≤ RIP < -75.0	dBm
RTWP_LEV _511	-75.0 ≤ RIP	dBm

10.2 Angle of Arrival (AOA)

10.2.1 Range/mapping

The reporting range for AOA measurement is from 0 to 360 degree, with resolution of 0.5 degree.

The mapping of the measured quantity is defined in table 10.2.1-1.

Table 10.2.1-1: AOA measurement report mapping

Reported value	Measured quantity value	Unit
AOA_ANGLE _000	0 ≤ AOA_ANGLE < 0.5	degree
AOA_ANGLE _001	0.5 ≤ AOA_ANGLE < 1	degree
AOA_ANGLE _002	1 ≤ AOA_ANGLE < 1.5	degree
•••	***	
AOA_ANGLE _717	358.5 ≤ AOA_ANGLE < 359	degree
AOA_ANGLE _718	359 ≤ AOA_ANGLE < 359.5	degree
AOA_ANGLE _719	359.5 ≤ AOA_ANGLE < 360	degree

10.3 Timing Advance (T_{ADV})

10.3.1 Report mapping

The reporting range of T_{ADV} is defined from 0 to $49232T_s$ with $2T_s$ resolution for timing advance less or equal to $4096T_s$ and $8T_s$ for timing advance greater than $4096T_s$.

The mapping of measured quantity is defined in Table 10.3.1-1.

Table 10.3.1-1: T_{ADV} measurement report mapping

Reported value	Measured quantity value	Unit
TIME_ADVANCE_00	T _{ADV} < 2	Ts
TIME_ADVANCE_01	2 ≤ T _{ADV} < 4	Ts
TIME_ADVANCE_02	$4 \le T_{ADV} < 6$	Ts
•••		•••
TIME_ADVANCE_2046	$4092 \le T_{ADV} < 4094$	Ts
TIME_ADVANCE_2047	$4094 \le T_{ADV} < 4096$	Ts
TIME_ADVANCE_2048	$4096 \le T_{ADV} < 4104$	Ts
TIME_ADVANCE_2049	$4104 \le T_{ADV} < 4112$	Ts
•••		•••
TIME_ADVANCE_7688	$49216 \le T_{ADV} < 49224$	T_s
TIME_ADVANCE_7689	$49224 \le T_{ADV} < 49232$	Ts
TIME_ADVANCE_7690	$49232 \le T_{ADV}$	Ts

11 ProSe Requirements in Any Cell Selection state

11.1 Introduction

This section contains the requirements for the UE capable of ProSe Direct Communication in any cell selection state . The ProSe requirements shall apply provided that the sidelink used by the UE for ProSe Direct Communication is on the carrier that is preconfigured in the ProSe UE for out-of-coverage operation.

Note: Any cell selection state refers to a UE that is out of network coverage.

11.2 UE Transmit Timing for ProSe in Any Cell Selection State

11.2.1 Introduction

This clause contains requirements on the UE capable of ProSe Direct Communication regarding transmit timing in any cell selection state.

11.2.2 ProSe UE transmission timing

The requirements in this subclause are applicable when the reference timing used for deriving ProSe transmission is from another ProSe UE transmitting sidelink synchronization signals.

The sidelink transmissions takes place $(N_{\rm TA,SL} + N_{\rm TA\,offset}) \cdot T_{\rm s}$ before the reception of the first detected path (in time) of the corresponding timing reference frame from the UE, with $N_{\rm TA\,offset} = 0$ and $N_{\rm TA,SL} = 0$ [16]. The transmission timing error for sidelink transmissions shall be less than or equal to $\pm T_{\rm e}$ where the timing error limit value $T_{\rm e}$ is specified in Table 11.2.2-1.

Table 11.2.2-1: T_e Timing Error Limit

Sidel	link Bandwidth (MHz)	T _e
	≥1.4	24*T _S
Note: T _S is the basic timing unit defined in TS 36.211		

11.3 Initiation/Cease of SLSS Transmissions

11.3.1 Introduction

The requirements in this subclause apply when the conditions for SLSS transmissions specified in [2] are met and if syncTxThreshOoC is included in the preconfigured ProSe parameters.

11.3.2 Requirements

The UE shall be capable of measuring the S-RSRP of the selected SyncRef UE used to derive transmission timing for Prose Direct Communication and evaluate it to initiate/cease SLSS transmissions within $T_{evaluate,SLSS} = 0.8$ seconds.

If higher layer filtering for S-RSRP measurements is pre-configured, an additional delay in evaluation to initiate/cease SLSS transmissions can be expected.

For the selected SyncRef UE [2] used to derive transmission timing for ProSe Direct Communication:

- S-RSRP related side conditions given in Section 11.5 for a corresponding Band are fulfilled,
- ProSe SCH_RP and SCH Ês/Iot according to Annex B.5.1 for a corresponding Band are fulfilled.

11.4 Measurements for ProSe in Any Cell Selection State

11.4.1 Introduction

This clause contains requirements for E-UTRA cell identification for the UE capable of ProSe Direct Communication in any cell selection state.

The UE can be preconfigured with ProSe resources for ProSe operation in any cell selection state.

The requirements in this section are applicable for the ProSe in any cell selection state. The ProSe UE in any cell selection state shall:

- continuously search for any detectable E-UTRA cell on the donwlink carrier frequency associated with the preconfigured ProSe carrier frequency for ProSe operation in any cell selection state, and
- search cells also on other carriers and perform cell selection according to the procedure specified in section 4.1.

11.4.2 Requirements

The UE capable of ProSe Direct Communication immediately upon entering in any cell selection state shall search for any detectable cell on the carrier preconfigured with ProSe resources.

In any cell selection state the UE shall be able to identify a newly detectable E-UTRA cell on the downlink carrier frequency associated with the preconfigured with ProSe carrier frequency:

- within $T_{basic_identify_OoC_ProSe\ Tx_ON}$ if the UE is performing ProSe transmissions on the sidelink, or
- within T_{basic identify OoC ProSe Tx OFF} if the UE is not performing ProSe transmissions on the sidelink.

where,

```
T_{basic\_identify\_OoC\_ProSe\ Tx\_ON} = 6.4 seconds, and
```

T_{basic identify OoC ProSe Tx OFF} = 32 seconds.

An E-UTRA cell is considered detectable provided it meets the intra-frequency cell identification conditions specified in section 8.1.2.2.

11.5 Selection / Reselection of ProSe Synchronization Reference

11.5.1 Introduction

This clause contains requirements for the measurements performed by the UE capable of ProSe Direct Communication in any cell selection state.

11.5.2 Selection/Reselection to intra-frequency SyncRef UE

11.5.2.1 Introduction

This clause contains requirements for the measurement for the ProSe synchronization on the UE capable of ProSe Direct Communication in any cell selection state.

11.5.2.2 Requirements

The UE shall be able to identify newly detectable SyncRef UE within $T_{\text{detect,SyncRef UE}}$ seconds if SyncRef UE meets the selection / reselection criterion defined in TS 36.331 [2].

ProSe synchronization source, SyncRef UE, is defined as a ProSe synchronization source which is capable to transmit ProSe synchronization signals.

A SyncRef UE is considered to be detectable when

- S-RSRP related side conditions given in Section 11.6 are fulfilled for a corresponding Band,
- ProSe SCH_RP and SCH Ês/Iot are fulfilled according to Annex B.5.3 for a corresponding Band.

 $T_{\text{detect,SyncRef UE}}$ is defined as 20 seconds at SCH Es/Iot \geq -4 dB, provided that the ProSe UE is allowed to drop a maximum of 2% of its ProSe Direct Communication transmissions at the physical layer for the purpose of SyncRef UE selection / reselection.

The UE capable of ProSe Direct Communication shall be capable of performing S-RSRP measurements for 6 identified ProSe synchronization sources with the measurement period of 400 ms. It is assumed that the ProSe synchronization sources do not drop or delay more than one SLSS transmission within the measurement period. Otherwise, the measurement period may be extended.

11.6 Measurements Performance Requirements for ProSe in Any Cell Selection State

11.6.1 Introduction

The requirements in this clause are applicable for a UE capable of ProSe direct communication:

- in Any Cell Selection State,
- that is synchronised to the ProSe synchronization source that is measured.

The reported measurement result after layer 1 filtering shall be an estimate of the average value of the measured quantity over the measurement period. The reference point for the measurement result after layer 1 filtering is referred to as point B in the measurement model described in [25].

The accuracy requirements in this clause are:

- applicable for AWGN radio propagation conditions,
- assume independent interference (noise) at each receiver antenna port.

- valid for the reported measurement result after layer 1 filtering,
- are verified from the measurement report at point D in the measurement model having the higher layer filtering disabled.

11.6.2 Intra-Frequency S-RSRP Measurement Accuracy Requirements

11.6.2.1 Absolute S-RSRP Accuracy

The requirements for absolute accuracy of S-RSRP in this clause apply to a ProSe synchronization source on the same frequency as that of the own ProSe UE performing the measurement.

The accuracy requirements in Table 11.5.2.1-1 are valid under the following conditions:

- Demodulation reference signals are transmitted from one port.
- Conditions defined in 36.101 Clause 7.3D for reference sensitivity are fulfilled.
- S-RSRP|dBm according to Annex B.5.1 for a corresponding Band are fulfilled.

Table 11.6.2.1-1: Intra-frequency S-RSRP absolute accuracy for UE capable of ProSe Direct Communication

Accı	uracy		C	onditions			
Normal	Extreme	Ês/lot		lo Note 1 range			
condition	condition	Note 4	E-UTRA ProSe operating band groups Note 3	Minin	num lo	Maximum Io	
dB	dB	dB		dBm/15kHz Note 2	dBm/BW _{Channel}	dBm/BW _{Channel}	
			FDD_D	-119.5	N/A	-70	
			FDD_E	-119	N/A	-70	
±4.5	±9	≥-6 dB	FDD_F	-118.5	N/A	-70	
		Ì		FDD_G	-118	N/A	-70
			FDD_N	-114.5	N/A	-70	
±8	±11	≥-6 dB	FDD_D, FDD_E, FDD_F, FDD_G, FDD_N	N/A	-70	-50	

- NOTE 1: Io is assumed to have constant EPRE across the bandwidth.
- NOTE 2: The condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.
- NOTE 3: E-UTRA ProSe operating band groups are as defined in Section 3.5 for the corresponding E-UTRA operating bands.
- NOTE 4: Ês/lot for a SyncRef UE is the minimum of the Ês/lot of PSSS/PSBCH and the Ês/lot of SSSS

11.6.2.2 Relative Accuracy of S-RSRP

The relative accuracy of S-RSRP is defined as the S-RSRP measured from one ProSe synchronization source compared to the S-RSRP measured from another ProSe synchronization source on the same frequency.

The accuracy requirements in Table 11.5.2.2-1 are valid under the following conditions:

- Demodulation reference signals are transmitted from one port.
- Conditions defined in 36.101 Clause 7.3D for reference sensitivity are fulfilled.
- S-RSRP1,2_{dBm} according to Annex B.5.2 for a corresponding Band.

Table 11.6.2.2-1: S-RSRP Intra frequency relative accuracy for UE capable of ProSe direct communication

Accı	ıracy		Conditions		
Normal	Extreme	Êc/lot Note	lo ^{Note}	^{e 1} range	
condition	condition	Ês/lot Note	E-UTRA ProSe operating band groups Note 5	Minimum Io	Maximum Io
dB	dB	dB		dBm/15kHz Note 4	dBm/BW _{Channel}
			FDD_D	-119.5	-50
			FDD_E	-119	-50
±2	±3	≥-3 dB	FDD_F	-118.5	-50
			FDD_G	-118	-50
			FDD_N	-114.5	-50
±3	±3	≥-6 dB	Note 3	Note 3	Note 3

- NOTE 1: Io is assumed to have constant EPRE across the bandwidth.
- NOTE 2: The parameter Ês/lot is the minimum Ês/lot of the pair of SyncRef UEs to which the requirement applies.
- NOTE 3: The same bands and the same lo conditions for each band apply for this requirement as for the corresponding highest accuracy requirement.
- NOTE 4: The condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.
- NOTE 5: E-UTRA ProSe operating band groups are as defined in Section 3.5 for the corresponding E-UTRA operating bands.
- NOTE 6: Ês/lot for a SyncRef UE is the minimum of the Ês/lot of PSSS/PSBCH and the Ês/lot of SSSS

Annex A (normative): Test Cases

A.1 Purpose of annex

This Annex specifies test specific parameters for some of the functional requirements in sections 4 to 9. The tests provide additional information to how the requirements should be interpreted for the purpose of conformance testing. The tests in this Annex are described such that one functional requirement may be tested in one or several test and one test may verify several requirements. Some requirements may lack a test.

The conformance tests are specified in TS 36.521-3 [23]. Statistical interpretation of the requirements is described in Annex A.2.

A.2 Requirement classification for statistical testing

Requirements in this specification are either expressed as absolute requirements with a single value stating the requirement, or expressed as a success rate. There are no provisions for the statistical variations that will occur when the parameter is tested.

Annex A outlines the tests in more detail and lists the test parameters needed. The test will result in an outcome of a test variable value for the device under test (DUT) inside or outside the test limit. Overall, the probability of a "good" DUT being inside the test limit(s) and the probability of a "bad" DUT being outside the test limit(s) should be as high as possible. For this reason, when selecting the test variable and the test limit(s), the statistical nature of the test is accounted for.

The statistical nature depends on the type of requirement. Some have large statistical variations, while others are not statistical in nature at all. When testing a parameter with a statistical nature, a confidence level is set. This establishes the probability that a DUT passing the test actually meets the requirements and determines how many times a test has to be repeated and what the pass and fail criteria are. Those aspects are not covered by TS 36.133. The details of the tests on how many times to run it and how to establish confidence in the tests are described in TS 36.521-3 [23]. This Annex establishes the variable to be used in the test and whether it can be viewed as statistical in nature or not.

A.2.1 Types of requirements in TS 36.133

A.2.1.1 Time and delay requirements on UE higher layer actions

A very large part of the RRM requirements are delay requirements:

- In E-UTRAN RRC_IDLE state mobility (clause A.4) there is cell re-selection delay.
- In E-UTRAN RRC_CONNECTED state mobility (clauses A.5 and A.8) there is handover delay, cell search delay and measurement reporting delay.
- In RRC Connection Control (clause A.6) there is RRC re-establishment delay.

All have in common that the UE is required to perform an action observable in higher layers (e.g. camp on the correct cell) within a certain time after a specific event (e.g. when a new strong pilot or reference signal appears). The delay time is statistical in nature for several reasons, among others that several of the measurements are performed by the UE in a fading radio environment.

The variations make a strict limit unsuitable for a test. Instead there is a condition set for a correct action by the UE, e.g. that the UE shall camp on the correct cell within X seconds. Then the rate of correct events is observed during repeated tests and a limit is set on the rate of correct events, usually 90% correct events are required. How the limit is applied in the test depends on the confidence required, further detailed are in TS 36.521-3 [23].

A.2.1.2 Measurements of power levels, relative powers and time

A very large number of requirements are on measurements that the UE performs:

- In E-UTRAN RRC_CONNECTED state mobility (clause A.5) there are measurement reports.
- In Measurement Performance Requirements (clause A.9) there are requirements for all type of measurements.

The accuracy requirements on measurements are expressed in this specification as a fixed limit (e.g. +/-X dB), but the measurement error will have a distribution that is not easily confined in fixed limits. Assuming a Gaussian distribution of the error, the limits will have to be set at +/-3.29 σ if the probability of failing a "good DUT" in a single test is to be kept at 0.1%. It is more reasonable to set the limit tighter and test the DUT by counting the rate of measurements that are within the limits, in a way similar to the requirements on delay.

A.2.1.3 Implementation requirements

A few requirements are strict actions the UE should take or capabilities the UE should have, without any allowance for deviations. These requirements are absolute and should be tested as such. Examples are:

- "Event triggered report rate" in E-UTRAN RRC_CONNECTED state mobility (clauses A.5 and A.8)
- "Correct behaviour at time-out" in RRC connection control (clause A.6)

A.2.1.4 Physical layer timing requirements

There are requirements on Timing and Signaling Characteristics (clauses A.7). There are both absolute and relative limits on timing accuracy depending upon the type of requirement. Examples are:

- Initial Transmit Timing (clause A.7.1) has an absolute limit on timing accuracy.
- Timing Advance (clause A.7.2) has a relative limit on timing accuracy.

A.3 RRM test configurations

A.3.1 Reference Measurement Channels

A.3.1.1 PDSCH

A.3.1.1.1 FDD

Table A.3.1.1.1: PDSCH Reference Measurement Channels for FDD

Parameter	Unit	Value								
Reference channel		R.2		R.5	R.7	R.0	R.1	R.3	R.4	R.6
		FDD		FDD	FDD	FDD	FDD	FDD	FDD	FDD
Channel bandwidth	MHz	1.4	3	5	5	10	10	10	20	20
Number of transmitter antennas		1		1	1	1	2	1	1	1
Allocated resource blocks (Note 4)		2		11	11	24	24	24	24	24
Allocated subframes per Radio Frame		10		10	10	10	10	10	10	10
Modulation		QPS		QPS	QPS	QPS	QPS	QPS	QPS	QPS
		K		K	K	K	K	K	K	K
Target Coding Rate		1/3		1/3	1/3	1/3	1/3	1/3	1/3	1/3
Information Bit Payload										
For Sub-Frames 4, 9	Bits	120		968	968	2088	2088	2088	2088	2088
For Sub-Frame 5	Bits	104		776	776	2088	1736	2088	2088	2088
For Sub-Frame 0	Bits	32		616	616	1736	1736	1736	1736	1736
For Sub-Frame 1, 2, 3, 6, 7, 8	Bits	0		0	968	0	0	2088	0	2088
Number of Code Blocks per Sub-Frame										
(Note 5)										
For Sub-Frames 4, 9		1		1	1	1	1	1	1	1
For Sub-Frame 5		1		1	1	1	1	1	1	1
For Sub-Frame 0		1		1	1	1	1	1	1	1
For Sub-Frame 1, 2, 3, 6, 7, 8		0		0	1	0	0	1	0	1
Binary Channel Bits Per Sub-Frame										
For Sub-Frames 4, 9	Bits	456		2772	2772	6624	6336	6624	6624	6624
For Sub-Frame 5	Bits	360		2484	2484	6336	6048	6336	6336	6336
For Sub-Frame 0	Bits	176		1932	1932	5784	5520	5784	5784	5784
For Sub-Frame 1, 2, 3, 6, 7, 8	Bits	0		0	2772	0	0	6624	0	6624
Max. Throughput averaged over 1	kbps	37.6		332.8	913.6	800	765	2053	800	2053
frame										

Note 1: 2 symbols allocated to PDCCH for 10 MHz channel BW. 4 symbols allocated to PDCCH for 1.4 MHz channel BW. 3 OFDM symbols allocated to PDCCH for 5 MHz channel BW.

Note 2: Reference signal, synchronization signals and PBCH allocated as defined in 3GPP TS 36.211 [16].

Note 3: If necessary the information bit payload size can be adjusted to facilitate the test implementation. The payload sizes are defined in 3GPP TS 36.213 [3].

Note 4: Allocation is located in the middle of bandwidth.

Note 5: If more than one Code Block is present, an additional CRC sequence of L = 24 Bits is attached to each Code Block (otherwise L = 0 Bit)

Note 6: PDSCH allocation applies only to subframes not configured as PRS subframes.

A.3.1.1.2 TDD

Table A.3.1.1.2-1: PDSCH Reference Measurement Channels for TDD UL/DL configuration1

Parameter	Unit			Va	alue		
Reference channel		R.2		R.4	R.0	R.1	R.3
		TDD		TDD	TDD	TDD	TDD
Channel bandwidth	MHz	1.4	3	5	10	10	20
Number of transmitter antennas		1		1	1	2	1
Allocated resource blocks (Note 4)		2		11	24	24	24
Uplink-Downlink Configuration (Note 5)		1		1	1	1	1
Special Subframe Configuration (Note 6)		6		6	6	6	6
Allocated subframes per Radio Frame		6		6	6	6	6
Modulation		QPSK		QPSK	QPSK	QPSK	QPSK
Target Coding Rate		1/3		1/3	1/3	1/3	1/3
Information Bit Payload							
For Sub-Frames 4,9	Bits	120		968	2088	2088	2088
For Sub-Frame 5	Bits	104		968	2088	2088	2088
For Sub-Frame 0	Bits	56		616	2088	1736	2088
For Sub-Frame 1, 6 (DwPTS)	Bits	56		472	1032	1032	1032
Number of Code Blocks per Sub-Frame		1		1	1	1	1
(Note 7)							
For Sub-Frames 4,9		1		1	1	1	1
For Sub-Frame 5		1		1	1	1	1
For Sub-Frame 0		1		1	1	1	1
For Sub-Frame 1, 6 (DwPTS)		1		1	1	1	1
Binary Channel Bits Per Sub-Frame							
For Sub-Frames 4,9	Bits	456		2772	6624	6336	6624
For Sub-Frame 5	Bits	408		2628	6480	6192	6480
For Sub-Frame 0	Bits	224		2076	5928	5664	5928
For Sub-Frame 1, 6 (DwPTS)	Bits	272		1616	3696	3504	3696
Max. Throughput averaged over 1 frame	Mbps	0.051		0.446	1.041	1.006	1.0416
		2		4	6	4	

- Note 1: 2 symbols allocated to PDCCH for 10 MHz channel BW. 3 OFDM symbols allocated to PDCCH for 5MHz channel BW. 4 symbols allocated to PDCCH for 1.4 MHz channel BW. For special subframe (1 & 6) only 2 OFDM symbols are allocated to PDCCH for all bandwidths.
- Note 2: Reference signal, synchronization signals and PBCH allocated as defined in TS 36.211 [16].
- Note 3: If necessary the information bit payload size can be adjusted to facilitate the test implementation. The payload sizes are defined in TS 36.213 [3].
- Note 4: Allocation is located in the middle of bandwidth.
- Note 5: As per Table 4.2-2 in TS 36.211 [16]
- Note 6: As per Table 4.2-1 in TS 36.211 [16]
- Note 7: If more than one Code Block is present, an additional CRC sequence of L = 24 Bits is attached to each Code Block (otherwise L = 0 Bit)
- Note 8: PDSCH allocation applies only to subframes not configured as PRS subframes.

Table A.3.1.1.2-2: PDSCH Reference Measurement Channels for TDD UL/DL configuration0

Parameter	Unit	Value						
Reference channel					R.5			
					TDD			
Channel bandwidth	MHz	1.4	3	5	10	10	20	
Number of transmitter antennas					1			
Allocated resource blocks (Note 4)					24			
Uplink-Downlink Configuration (Note 5)					0			
Special Subframe Configuration (Note 6)					6			
Allocated subframes per Radio Frame					4			
Modulation					QPSK			
Target Coding Rate					1/3			
Information Bit Payload								
For Sub-Frames 4,9	Bits				N/A			
For Sub-Frame 5	Bits				2088			
For Sub-Frame 0	Bits				2088			
For Sub-Frame 1, 6 (DwPTS)	Bits				1032			
Number of Code Blocks per Sub-Frame					1			
(Note 7)								
For Sub-Frames 4,9					N/A			
For Sub-Frame 5					1			
For Sub-Frame 0					1			
For Sub-Frame 1, 6 (DwPTS)					1			
Binary Channel Bits Per Sub-Frame								
For Sub-Frames 4,9	Bits				N/A			
For Sub-Frame 5	Bits				6480			
For Sub-Frame 0	Bits				5928			
For Sub-Frame 1, 6 (DwPTS)	Bits				3696			
Max. Throughput averaged over 1 frame	Mbps				0.624			

- 2 symbols allocated to PDCCH for 10 MHz channel BW. 3 OFDM symbols allocated to PDCCH for Note 1: 5MHz channel BW. 4 symbols allocated to PDCCH for 1.4 MHz channel BW. For special subframe (1 & 6) only 2 OFDM symbols are allocated to PDCCH for all bandwidths.
- Note 2: Reference signal, synchronization signals and PBCH allocated as defined in TS 36.211 [16].
- Note 3: If necessary the information bit payload size can be adjusted to facilitate the test implementation. The payload sizes are defined in TS 36.213 [3].
- Allocation is located in the middle of bandwidth. Note 4:
- Note 5:
- As per Table 4.2-2 in TS 36.211 [16] As per Table 4.2-1 in TS 36.211 [16] Note 6:
- If more than one Code Block is present, an additional CRC sequence of L = 24 Bits is attached to Note 7: each Code Block (otherwise L = 0 Bit)
- Note 8: PDSCH allocation applies only to subframes not configured as PRS subframes.

A.3.1.1.3 FDD for UE category 0

Table A.3.1.1.3-1: PDSCH Reference Measurement Channels for FDD

Parameter	Unit	Value				
Reference channel		R.13 FDD	R.14 FDD	R.15 FDD		
Channel bandwidth	MHz	10	10	10		
Number of transmitter antennas		1	2	2		
Allocated resource blocks (Note 4)		24	24	24		
Allocated subframes per Radio Frame		10	10	10		
Modulation		QPSK	QPSK	QPSK		
Target Coding Rate		1/10	1/10	1/10		
Information Bit Payload						
For Sub-Frames 4, 9	Bits	648	648	648		
For Sub-Frame 5	Bits	648	648	648		
For Sub-Frame 0	Bits	648	648	648		
For Sub-Frame 1, 2, 3, 6, 7, 8	Bits	0	0	648		
Number of Code Blocks per Sub-Frame (Note 5)						
For Sub-Frames 4, 9		1	1	1		
For Sub-Frame 5		1	1	1		
For Sub-Frame 0		1	1	1		
For Sub-Frame 1, 2, 3, 6, 7, 8		1	1	1		
Binary Channel Bits Per Sub-Frame						
For Sub-Frames 4, 9	Bits	6624	6336	6636		
For Sub-Frame 5	Bits	6336	6048	6408		
For Sub-Frame 0	Bits	5784	5520	5520		
For Sub-Frame 1, 2, 3, 6, 7, 8	Bits	0	0	6636		
Max. Throughput averaged over 1 frame	kbps	259.2	259.2	648		

Note 1: 2 symbols allocated to PDCCH for 10 MHz channel BW. 4 symbols allocated to PDCCH for 1.4 MHz channel BW. 3 OFDM symbols allocated to PDCCH for 5 MHz channel BW.

Note 2: Reference signal, synchronization signals and PBCH allocated as defined in 3GPP TS 36.211 [16].

Note 3: If necessary the information bit payload size can be adjusted to facilitate the test implementation. The payload sizes are defined in 3GPP TS 36.213 [3].

Note 4: Allocation is located in the middle of bandwidth.

Note 5: If more than one Code Block is present, an additional CRC sequence of L = 24 Bits is attached to each Code Block (otherwise L = 0 Bit)

Note 6: PDSCH allocation applies only to subframes not configured as PRS subframes.

A.3.1.1.4 HD-FDD for UE category 0

Table A.3.1.1.4-1: PDSCH Reference Measurement Channels for HD-FDD

Parameter	Unit		Value
Reference channel		R.1 HD-FDD	R.2 HD-FDD
Channel bandwidth	MHz	10	10
Number of transmitter antennas		1	2
Allocated resource blocks (Note 4)		24	24
Allocated subframes per Radio Frame		10	10
Modulation		QPSK	QPSK
Target Coding Rate		1/10	1/10
Information Bit Payload			
For Sub-Frames 4, 9,	Bits	0	0
For Sub-Frame 5 (Note 7)	Bits	424	424
For Sub-Frame 0 (Note 7)		648	648
For Sub-Frame 1, 2, 3, 6, 7, 8	Bits	0	0
For Sub-Frame 1, 6	Bits		
Number of Code Blocks per Sub-Frame			
(Note 5)			
For Sub-Frames 4, 9		1	1
For Sub-Frame 5		1	1
For Sub-Frame 0		1	1
For Sub-Frame 1, 2, 3, 6, 7, 8		1	1
Binary Channel Bits Per Sub-Frame			
For Sub-Frames 4, 9	Bits	0	0
For Sub-Frame 5	Bits	6336	6048
For Sub-Frame 0	Bits	5784	5520
For Sub-Frame 1, 2, 3, 6, 7, 8	Bits	0	0
Max. Throughput averaged over 1 frame	kbps		

- Note 1: 2 symbols allocated to PDCCH for 10 MHz channel BW. 4 symbols allocated to PDCCH for 1.4 MHz channel BW. 3 OFDM symbols allocated to PDCCH for 5 MHz channel BW.
- Note 2: Reference signal, synchronization signals and PBCH allocated as defined in 3GPP TS 36.211 [16].
- Note 3: If necessary the information bit payload size can be adjusted to facilitate the test implementation. The payload sizes are defined in 3GPP TS 36.213 [3].
- Note 4: Allocation is located in the middle of bandwidth.
- Note 5: If more than one Code Block is present, an additional CRC sequence of L = 24 Bits is attached to each Code Block (otherwise L = 0 Bit)
- Note 6: PDSCH allocation applies only to subframes not configured as PRS subframes.
- Note 7: Sub-frame 0 or sub-frame 5 is randomly scheduled in downlink.

A.3.1.1.5 TDD for UE category 0

Table A.3.1.1.5-1: PDSCH Reference Measurement Channels for TDD UL/DL configuration1

Parameter	Unit	Value		
Reference channel		R.12 TDD	R.13 TDD	
Channel bandwidth	MHz	10	10	
Number of transmitter antennas		1	2	
Allocated resource blocks (Note 4)		24	24	
Uplink-Downlink Configuration (Note 5)		1	1	
Special Subframe Configuration (Note 6)		6	6	
Allocated subframes per Radio Frame		6	6	
Modulation		QPSK	QPSK	
Target Coding Rate		1/10	1/10	
Information Bit Payload				
For Sub-Frames 4,9	Bits	648	648	
For Sub-Frame 5	Bits	648	648	
For Sub-Frame 0	Bits	648	648	
For Sub-Frame 1, 6 (DwPTS)	Bits	488	488	
Number of Code Blocks per Sub-Frame		1	1	
(Note 7)				
For Sub-Frames 4,9		1	1	
For Sub-Frame 5		1	1	
For Sub-Frame 0		1	1	
For Sub-Frame 1, 6 (DwPTS)		1	1	
Binary Channel Bits Per Sub-Frame				
For Sub-Frames 4,9	Bits	6624	6336	
For Sub-Frame 5	Bits	6580	6192	
For Sub-Frame 0	Bits	5928	5664	
For Sub-Frame 1, 6 (DwPTS)	Bits	3696	3408	
Max. Throughput averaged over 1 frame	Mbps	0.3552	0.3552	

- Note 1: 2 symbols allocated to PDCCH for 10 MHz channel BW. 3 OFDM symbols allocated to PDCCH for 5MHz channel BW. 4 symbols allocated to PDCCH for 1.4 MHz channel BW. For special subframe (1 & 6) only 2 OFDM symbols are allocated to PDCCH for all bandwidths.
- Note 2: Reference signal, synchronization signals and PBCH allocated as defined in TS 36.211 [16].
- Note 3: If necessary the information bit payload size can be adjusted to facilitate the test implementation. The payload sizes are defined in TS 36.213 [3].
- Note 4: Allocation is located in the middle of bandwidth.
- Note 5: As per Table 4.2-2 in TS 36.211 [16]
- Note 6: As per Table 4.2-1 in TS 36.211 [16]
- Note 7: If more than one Code Block is present, an additional CRC sequence of L = 24 Bits is attached to each Code Block (otherwise L = 0 Bit)
- Note 8: PDSCH allocation applies only to subframes not configured as PRS subframes.

A.3.1.2 PCFICH/PDCCH/PHICH

A.3.1.2.1 **FDD**

Table A.3.1.2.1-1: PCFICH/PDCCH/PHICH Reference Channel for FDD

Parameter	Unit				Valu	ue			
Reference channel		R.8 FDD	R.11	R.12	R.10	R.13	R.6	R.7	R.9
			FDD						
Channel bandwidth	MHz	1.4	5	5	20	20	10	10	10
Number of transmitter antennas		1	1	2	1	2	1	2	2
Control region OFDM symbols Note1	symbols	4	3	3	2	2	2	2	3
Aggregation level	CCE	2	8	8	8	8	8	8	8
		(Note 6)							
DCI Format		Note 3	Note 3	Note 3	Note 3	Note 3	Note 3	Note 3	Note 3
Cell ID		Note 4	Note 4	Note 4	Note 4	Note 4	Note 4	Note 4	Note 4
Payload (without CRC)	Bits	Note 5	Note 5	Note 5	Note 5	Note 5	Note 5	Note 5	Note 5

Note 1: The control region consists of PCFICH, PHICH and PDCCH. Note 2: DCl formats are defined in TS 36.212.

Note 3: DCI format shall depend upon the test configuration.

Note 4: Cell ID shall depend upon the test configuration.

Note 5: Payload size shall depend upon the test configuration.

Note 6: For PDCCH using SI/RA/P-RNTI, Aggregation level 4 is used.

A.3.1.2.2TDD

Table A.3.1.2.2-1: PCFICH/PDCCH/PHICH Reference Channel for TDD

Parameter	Unit				Valu	ıe			
Reference channel		R.8 TDD	R.11	R.12	R.10	R.13	R.6	R.7	R.9
			TDD	TDD	TDD	TDD	TDD	TDD	TDD
Channel bandwidth	MHz	1.4	5	5	20	20	10	10	10
Number of transmitter antennas		1	1	2	1	2	1	2	2
Control region OFDM symbols ^{Note1}	symbols	4	3	3	2	2	2	2	3
		(Note 6)							
Aggregation level	CCE	2	8	8	8	8	8	8	8
		(Note 7)							
DCI Format		Note 3	Note 3	Note 3	Note 3	Note 3	Note 3	Note 3	Note 3
Cell ID		Note 4	Note 4	Note 4	Note 4	Note 4	Note 4	Note 4	Note 4
Payload (without CRC)	Bits	Note 5	Note 5	Note 5	Note 5	Note 5	Note 5	Note 5	Note 5
	trol region co			ICH and F	DCCH.				
Note 2: DCI form	nats are defir	ned in TS 36.	.212.						
	nat shall depe								
	hall depend								
	3								
	FDM symbo								
Note 7: For PDC	CH using SI	/RA/P-RNTI,	Aggregat	ion level 4	l is used.				

A.3.1.2.3 HD-FDD for UE category 0

Table A.3.1.2.3-1: PCFICH/PDCCH/PHICH Reference Channel for HD-FDD

Parameter	Unit	Value					
Reference channel		R.3 HD-FDD	R.4 HD-FDD	R.5 HD-FDD			
Channel bandwidth	MHz	10	10	10			
Number of transmitter antennas		1	2	2			
Control region OFDM symbols Note1	symbols	2	2	3			
Aggregation level	CCE	8	8	8			
DCI Format		Note 3	Note 3	Note 3			
Cell ID		Note 4	Note 4	Note 4			
Payload (without CRC)	Bits	Note 5	Note 5	Note 5			

Note 1: The control region consists of PCFICH, PHICH and PDCCH.

Note 2: DCI formats are defined in TS 36.212.

Note 3: DCI format shall depend upon the test configuration.

Note 4: Cell ID shall depend upon the test configuration.

Note 5: Payload size shall depend upon the test configuration.

Note 6: For PDCCH using SI/RA/P-RNTI, Aggregation level 4 is used.

Note 7: Sub-frame 0 or sub-frame 5 is randomly scheduled in downlink.

A.3.2 OFDMA Channel Noise Generator (OCNG)

A.3.2.1 OCNG Patterns for FDD

The following OCNG patterns are used for modelling allocations to virtual UEs (which are not under test) and/or allocations used for MBSFN. The OCNG pattern for each sub frame specifies the allocations that shall be filled with OCNG, and furthermore, the relative power level of each such allocation.

In each test case the OCNG is expressed by parameters OCNG_RA and OCNG_RB which together with a relative power level (γ) specifies the PDSCH EPRE-to-RS EPRE ratios in OFDM symbols without and with reference symbols, respectively. The relative power, which is used for modelling boosting per virtual UE allocation, is expressed by:

$$\gamma_i = PDSCH_i _RA/OCNG _RA = PDSCH_i _RB/OCNG _RB$$

where γ_i denotes the relative power level of the *i:th* virtual UE. The parameter settings of OCNG_RA, OCNG_RB, and the set of relative power levels γ are chosen such that when also taking allocations to the UE under test into account, as given by a PDSCH reference channel, a constant transmitted power spectral density that is constant on an OFDM symbol basis is targeted.

Moreover the OCNG pattern is accompanied by a PCFICH/PDCCH/PHICH reference channel which specifies the control region. The number of PDCCH OFDM symbols in the non-MBSFN subframes is the same as specified in the RMC used in the test. The number of PDCCH OFDM symbols in the MBSFN subframe is the maximal allowed according to TS 36.213 [16]. For any aggregation and PHICH allocation, the PDCCH and any unused PHICH groups are padded with resource element groups with a power level given by PDCCH_RA/RB and PHICH_RA/RB as specified in the test case such that a total power spectral density in the control region that is constant on an OFDM symbol basis is targeted.

For subframes configured as PRS subframes the PDSCH allocation defined in the OCNG pattern does not apply.

For subframes configured as ABS subframes the PDSCH and PMCH allocation defined in the OCNG pattern does not apply.

The system information is scheduled in the allocations reserved for the OCNG patterns, in the subframes not configured for MBSFN. For this purpose the number of the RB-s allocated with PDSCH defined in the OCNG pattern can be reduced as necessary.

A.3.2.1.1 OCNG FDD pattern 1: outer resource blocks allocation in 10 MHz

Table A.3.2.1.1-1: OP.1 FDD: OCNG FDD Pattern 1

Allocation	Re	lative power l	B]	PDSCH Data	PMCH Data	
$n_{\it PRB}$		Subfr		Data	Data	
	0	5	4,9	1-3, 6-8		
0 – 12	0	0	0	N/A	Note 1	N/A
37 – 49	0	0	0	N/A	110101	14/71
0-49	N/A	N/A	N/A	Note 4	N/A	Note 2

- Note 1: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter γ_{PRB} is used to scale the power of PDSCH.
- Note 2: Each physical resource block (PRB) is assigned to MBSFN transmission. The data in each PRB shall be uncorrelated with data in other PRBs over the period of any measurement. The MBSFN data shall be QPSK modulated. PMCH symbols shall not contain cell-specific Reference Signals. PMCH subframes shall contain cell-specific Reference Signals only in the first symbol of the first time slot. The parameter γ_{PRB} is used to scale the power of PMCH.
- Note 3: If two or more transmit antennas with CRS are used in the test, the PDSCH part of OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power of the PDSCH part of OCNG is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in clause 7.1 in TS 36.213.
- Note 4: 0dB for 1 transmit antenna with CRS, +3dB for 2 transmit antennas with CRS

N/A: Not Applicable

A.3.2.1.2 OCNG FDD pattern 2: full bandwidth allocation in 10 MHz

Table A.3.2.1.2-1: OP.2 FDD: OCNG FDD Pattern 2

Allocation	Re	PDSCH Data	PMCH Data			
$n_{\it PRB}$		Dutu	Data			
	0	5	4, 9	1 - 3, 6 - 8		

0 – 49	0	0	0	N/A	Note 1	N/A
0 – 49	N/A	N/A	N/A	Note 4	N/A	Note 2

Note 1: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter γ_{PRB} is used to scale the power of PDSCH.

Note 2: Each physical resource block (PRB) is assigned to MBSFN transmission. The data in each PRB shall be uncorrelated with data in other PRBs over the period of any measurement. The MBSFN data shall be QPSK modulated. PMCH subframes shall contain cell-specific Reference Signals only in the first symbol of the first time slot. The parameter γ_{PRB} is used to scale the power of PMCH.

Note 3: If two or more transmit antennas with CRS are used in the test, the PDSCH part of OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power of the PDSCH part of OCNG is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in clause 7.1 in TS 36.213.

Note 4: 0dB for 1 transmit antenna with CRS, +3dB for 2 transmit antennas with CRS

N/A: Not Applicable

A.3.2.1.3 OCNG FDD pattern 3: outer resource blocks allocation in 1.4 MHz

Table A.3.2.1.3-1: OP.3 FDD: OCNG FDD Pattern 3

Allocation	Relative power level $\gamma_{\scriptscriptstyle PRB}$ [dB]				PDSCH Data	PMCH Data
$n_{\it PRB}$						
	0	5	4,9	1-3, 6-8		
0 – 1	0	0	0	N/A	Note 1	N/A
4 – 5	0	0	0	N/A	NOLE	IN/A
	Ů	Ů	ŭ	14// (
0 – 5	N/A	N/A	N/A	Note 4	N/A	Note 2

Note 1: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter γ_{PRB} is used to scale the power of PDSCH.

Note 2: Each physical resource block (PRB) is assigned to MBSFN transmission. The data in each PRB shall be uncorrelated with data in other PRBs over the period of any measurement. The MBSFN data shall be QPSK modulated. PMCH symbols shall not contain cell-specific Reference Signals. PMCH subframes shall contain cell-specific Reference Signals only in the first symbol of the first time slot. The parameter γ_{PRB} is used to scale the power of PMCH.

Note 3: If two or more transmit antennas with CRS are used in the test, the PDSCH part of OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power of the PDSCH part of OCNG is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in clause 7.1 in TS 36.213.

Note 4: 0dB for 1 transmit antenna with CRS, +3dB for 2 transmit antennas with CRS

N/A: Not Applicable

A.3.2.1.4 OCNG FDD pattern 4: full bandwidth allocation in 1.4 MHz

Table A.3.2.1.4-1: OP.4 FDD: OCNG FDD Pattern 4

Allocation	Re	Relative power level $\gamma_{\it PRB}$ [dB]					
$n_{\it PRB}$		Subframe					
	0	5	4, 9	1 – 3, 6 – 8			
0 – 5	0	0	0	N/A	Note 1	N/A	
0 – 5	N/A	N/A	N/A	Note 4	N/A	Note 2	

- Note 1: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter γ_{PRB} is used to scale the power of PDSCH.
- Note 2: Each physical resource block (PRB) is assigned to MBSFN transmission. The data in each PRB shall be uncorrelated with data in other PRBs over the period of any measurement. The MBSFN data shall be QPSK modulated. PMCH subframes shall contain cell-specific Reference Signals only in the first symbol of the first time slot. The parameter γ_{PRB} is used to scale the power of PMCH.
- Note 3: If two or more transmit antennas with CRS are used in the test, the PDSCH part of OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power of the PDSCH part of OCNG is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in clause 7.1 in TS 36.213.
- Note 4: 0dB for 1 transmit antenna with CRS, +3dB for 2 transmit antennas with CRS

N/A: Not Applicable

PDSCH

N/A:

Allocation

Not Applicable

A.3.2.1.5 OCNG FDD pattern 5: outer resource blocks allocation in 10 MHz (without MBSFN)

Table A.3.2.1.5-1: OP.5 FDD: OCNG FDD Pattern 5

Alloc		Re		evel $\gamma_{\it PRB}$ [d	В]	PDSCH Data
n_P	RB		Subframe	(Note 1)		
		0	5	4,9	1-3, 6-8	
0 -	12	0	0	0	N/A	
37 -	- 49	0	0	0	N/A	Note 2
0 —	49	N/A	N/A	N/A	0	
Note 1:		cation of any Pl			pplies only to	the
Note 2:	These p	es not configure hysical resourc Es with one PD PDSCHs shall b	e blocks are as SCH per virtua	ssigned to an a al UE; the data	a transmitted o	ver the
Note 3:	PDSCH If two or part of C	more transmit a	antennas with ransmitted to t	CRS are used the virtual user	in the test, the s by all the tra	PDSCH
	The para transmit transmit	s with CRS and ameter γ_{PRB} appower of the Pantennas with are specified in	oplies to each a DSCH part of CRS used in the	antenna port s OCNG is equa ne test. The ar	eparately, so t Il between all t	he he

OCNG FDD pattern 6: full bandwidth allocation in 10 MHz (without MBSFN) A.3.2.1.6

Table A.3.2.1.6-1: OP.6 FDD: OCNG FDD Pattern 6

Alloc	ation	Re	B]	PDSCH Data				
n_P	RB		Subframe	(Note 1)		Data		
		0	5	4, 9	1 - 3, 6 - 8			
0 –	49	0	0	0	0	Note 2		
Note 1:		cation of any Pl			pplies only to	the		
Note 2:	These p virtual U	ubframes not configured as PRS subframes. hese physical resource blocks are assigned to an arbitrary number of irtual UEs with one PDSCH per virtual UE; the data transmitted over the iPCNG PDSCHs shall be uncorrelated pseudo random data, which is						
	QPSK m	nodulated. The	parameter $\gamma_{\scriptscriptstyle I}$	p_{RB} is used to s	scale the powe	r of		
Note 3:	PDSCH	more transmit a part of OCNG s antennas with	shall be transn	nitted to the vir	tual users by a	all the		
	mode 2.	The parameter	$\gamma_{\it PRB}$ applies	to each anten	na port separa	ately, so		
N/A:	transmit	smit power of the antennas with are specified in licable	CRS used in tl	ne test. The ar				

PDSCH

Data

Allocation

 n_{PRB}

N/A:

Not Applicable

A.3.2.1.7 OCNG FDD pattern 7: full bandwidth allocation in 1.4 MHz (without MBSFN)

Table A.3.2.1.8-1: OP.7 FDD: OCNG FDD Pattern 7

Allocation		Re	B]	PDSCH Data				
n_{P}	RB		Subframe	(Note 1)		Data		
		0	5	4, 9	1 - 3, 6 - 8			
0 –		0	0	0	0	Note 2		
Note 1: Note 2:	subfram These p virtual U	he allocation of any PDSCH with or without SIB1 applies only to the ubframes not configured as PRS subframes. hese physical resource blocks are assigned to an arbitrary number of rtual UEs with one PDSCH per virtual UE; the data transmitted over the iCNG PDSCHs shall be uncorrelated pseudo random data, which is						
N. C	PDSCH.		, ,	ND				
Note 3:	PDSCH	more transmit a part of OCNG s antennas with	shall be transm	nitted to the vir	tual users by a	all the		
	mode 2.	The parameter	$\gamma_{\it PRB}$ applies	to each anten	na port separa	ately, so		
N/A:	transmit	smit power of th antennas with o are specified in o licable	CRS used in th	ne test. The ar				

A.3.2.1.8 OCNG FDD pattern 8: outer resource blocks allocation in 10 MHz for MBSFN ABS

Table A.3.2.1.8-1: OP.8 FDD: OCNG FDD Pattern 8

Relative power level $\gamma_{\it PRB}$ [dB]

Subframe (Note 1)

4,9 (1-3, 6-8)^{Note2}

			· ·	1,0	(: 0, 0 0)				
0 –	12	0	0	0	N/A				
37 -	- 49	0	0	0	N/A	Note 2			
0 –	49	N/A	N/A	N/A	0				
Note 1: PDSCH allocation does not apply to subframes configured as PRS subframes.									
Note 2:	virtual Ü OCNG F	These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter γ_{PRB} is used to scale the power of							
Note 3:	PDSCH If two or part of C	more transm CNG shall be	it antennas wit transmitted to	h CRS are u o the virtual ւ	sed in the test, the users by all the tra a transmission mo	e PDSCH Insmit			
Note 4:	transmit transmit modes a The sub PMCH o slot. The	power of the antennas with are specified if frame(s) conflata and shall be subframe(s)	PDSCH part of the CRS used in clause 7.1 in igured as MBS contain CRS of	of OCNG is end the test. The TS 36.213. SFN ABS in a conly in the fir MBSFN ABS	ort separately, so to qual between all to e antenna transmi a test shall not con st symbol of the fi S depend upon the	he ssion ntain any rst time			

OCNG FDD pattern 9: full bandwidth allocation in 10 MHz for MBSFN ABS A.3.2.1.9

Table A.3.2.1.9-1: OP.9 FDD: OCNG FDD Pattern 9

Alloc	ation	R	[dB]	PDSCH Data					
n_P	'RB		Subfra	me (Note 1)		Data			
		0	5	4, 9	(1-3, 6-8) ^{Note4}				
0 -	49	0	0	0	0	Note 2			
Note 1: Note 2:	subfram These p virtual U	PDSCH allocation applies only to subframes not configured as PRS subframes. These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is							
Note 3:	PDSCH If two or PDSCH transmit	more transmi part of OCNG antennas with	t antennas w S shall be train CRS and a	with CRS are us ensmitted to the eccording to the	o scale the power sed in the test, the e virtual users by a e antenna transmi tenna port separa	e all the ission			
Note 4:	the trans transmit modes a The sub PMCH o slot. The	smit power of antennas with are specified in frame(s) confilata and shall e subframe(s) ABS pattern of	the PDSCH processes the PDSCH processes the contain CRS configured as MB configured as configured as the configured as the processes the configured as the configuration and configuration as the configuration as th	part of OCNG in the test. The in TS 36.213. ISFN ABS in a conly in the firs S MBSFN ABS	is equal between antenna transmin test shall not corest symbol of the first depend upon the	all the ission ntain any rst time			

OCNG FDD pattern 10: outer resource blocks allocation in 10 MHz with user A.3.2.1.10 data in every subframe (without MBSFN)

Table A.3.2.1.10-1: OP.10 FDD: OCNG FDD Pattern 10

Allocation	on	Rel	ative power le	evel $\gamma_{{\scriptscriptstyle PRB}}$ [dE	3]	PDSCH Data				
n_{PRB}			Subframe	(Note 1)						
		0	5	4, 9	1 - 3, 6 - 8					
0 - 12		0	0	0	0	Note 2				
37 - 49)	0	0	0	0	NOIE 2				
Note 1:	The	allocation of a	ny PDSCH wit	h or without S	IB1 applies on	ly to the subframes				
	not	ot configured as PRS subframes.								
Note 2:		lese physical resource blocks are assigned to an arbitrary number of virtual								
	UE:	s with one PDS	CH per virtual	UE; the data t	ransmitted over	er the OCNG				
	PD	SCHs shall be เ	uncorrelated p	seudo random	data, which is	s QPSK modulated.				
Note 3:	If tw	OCNG shall be	smit antennas transmitted to	with CRS are the virtual use	used in the tears by all the tra	st, the PDSCH part ansmit antennas . The parameter				
	PD: in tl	applies to each antenna port separately, so the transmit power of the SCH part of OCNG is equal between all the transmit antennas with CRS used the test. The antenna transmission modes are specified in section 7.1 in 3GPP 36.213.								
N/A:	Not	Applicable								

A.3.2.1.11 OCNG FDD pattern 11: outer resource blocks allocation in 20 MHz

Table A.3.2.1.11-1: OP.11 FDD: OCNG FDD Pattern 11

Allocation	Re	Relative power level $\gamma_{\it PRB}$ [dB]				
$n_{\it PRB}$		Subfr	ame		Data	Data
	0	5	4,9	1-3, 6-8		
0 – 37	0	0	0	N/A	Note 1	N/A
62 – 99	0	0	0	N/A	Note	11/73
0-99	N/A	N/A	N/A	Note 4	N/A	Note 2

- Note 1: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter γ_{PRB} is used to scale the power of PDSCH.
- Note 2: Each physical resource block (PRB) is assigned to MBSFN transmission. The data in each PRB shall be uncorrelated with data in other PRBs over the period of any measurement. The MBSFN data shall be QPSK modulated. PMCH symbols shall not contain cell-specific Reference Signals. PMCH subframes shall contain cell-specific Reference Signals only in the first symbol of the first time slot. The parameter γ_{PRB} is used to scale the power of PMCH.
- Note 3: If two or more transmit antennas with CRS are used in the test, the PDSCH part of OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power of the PDSCH part of OCNG is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.
- Note 4: 0dB for 1 transmit antenna with CRS, +3dB for 2 transmit antennas with CRS N/A: Not Applicable

Note 4:

Not Applicable

N/A:

A.3.2.1.12 OCNG FDD pattern 12: full bandwidth allocation in 20 MHz

Table A.3.2.1.12-1: OP.12 FDD: OCNG FDD Pattern 12

Alloc		Re	lative power l	evel $\gamma_{\it PRB}$ [d	B]	PDSCH Data	PMCH Data	
n_{P}	PRB		Subfi	ame		Data	Data	
		0	5	4, 9	1 - 3, 6 - 8			
0 –	99	0	0	0	N/A	Note 1	N/A	
0 -	99	N/A	N/A	N/A	Note 4	N/A	Note 2	
Note 1:	with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter							
Note 2:	Each ph each PR measure	used to scale the specifical resource RB shall be uncomment. The MBS cell-specific Ref	block (PRB) is orrelated with o SFN data shal	s assigned to I data in other P I be QPSK mo	RBs over the publicated. PMCI	period of and subframe	ny es shall	
Note 3:	If two or	ameter γ_{PRB} is a more transmit a shall be transmit	antennas with	CRS are used	in the test, the			
	and acc	ording to the an	tenna transmi	ssion mode 2.	The paramete	er $\gamma_{_{PRB}}$ app	olies to	
	equal be	tenna port sepa etween all the tr ssion modes are	ansmit antenn	as with CRS u	sed in the test	. The anter		

0dB for 1 transmit antenna with CRS, +3dB for 2 transmit antennas with CRS

N/A:

Not Applicable

OCNG FDD pattern 13: outer resource blocks allocation in 20 MHz (without A.3.2.1.13 MBSFN)

Table A.3.2.1.13-1: OP.13 FDD: OCNG FDD Pattern 13

Alloca	ation	B]	PDSCH Data					
n_P	RB		Subframe	(Note 1)		Data		
		0	5	4,9	1-3, 6-8			
0 -	37	0	0	0	N/A			
62 -	- 99	0	0	0	N/A	Note 2		
0 -	99	N/A	N/A	N/A	0			
Note 1: Note 2:	subframes not configured as PRS subframes.							
Note 3:	PDSCH	more transmit part of OCNG	shall be transn	nitted to the vir	tual users by	all the		
	the trans transmit	transmit antennas with CRS and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power of the PDSCH part of OCNG is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.						

A.3.2.1.14 OCNG FDD pattern 14: full bandwidth allocation in 20 MHz (without MBSFN)

Table A.3.2.1.14-1: OP.14 FDD: OCNG FDD Pattern 14

Alloca	ation	Re	B]	PDSCH Data					
n_{P}	RB		Subframe	(Note 1)		Data			
		0	5	4, 9	1 - 3, 6 - 8				
0 –	99	0	0	0	0	Note 2			
Note 1: Note 2:	subfram These p virtual U	allocation of any PDSCH with or without SIB1 applies only to the frames not configured as PRS subframes. se physical resource blocks are assigned to an arbitrary number of all UEs with one PDSCH per virtual UE; the data transmitted over the NG PDSCHs shall be uncorrelated pseudo random data, which is							
	QPSK m	nodulated. The I	parameter $\gamma_{\scriptscriptstyle F}$	p_{RB} is used to s	scale the powe	er of			
Note 3:	If two or PDSCH	more transmit a part of OCNG s antennas with	shall be transm	nitted to the vir	tual users by a	all the			
	mode 2.	The parameter	$\gamma_{\it PRB}$ applies	to each anten	na port separa	ately, so			
N/A:	transmit	smit power of th antennas with or are specified in s licable	CRS used in th	ne test. The ar	ntenna transmi				

A.3.2.1.15 OCNG FDD pattern 15: outer resource blocks allocation in 5 MHz

Table A.3.2.1.15-1: OP.15 FDD: OCNG FDD Pattern 15

Allocation	Re	Relative power level $\gamma_{\it PRB}$ [dB]					
$n_{\it PRB}$		Subfr		Data	Data		
	0	5	4,9	1-3, 6-8			
0 – 6	0	0	0	N/A	Note 1	N/A	
18 – 24	0	0	0	N/A	Note	IN/A	
0-24	N/A	N/A	N/A	Note 4	N/A	Note 2	

- Note 1: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter γ_{PRB} is used to scale the power of PDSCH.
- Note 2: Each physical resource block (PRB) is assigned to MBSFN transmission. The data in each PRB shall be uncorrelated with data in other PRBs over the period of any measurement. The MBSFN data shall be QPSK modulated. PMCH symbols shall not contain cell-specific Reference Signals. PMCH subframes shall contain cell-specific Reference Signals only in the first symbol of the first time slot. The parameter γ_{PRB} is used to scale the power of PMCH.
- Note 3: If two or more transmit antennas with CRS are used in the test, the PDSCH part of OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power of the PDSCH part of OCNG is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.
- Note 4: 0dB for 1 transmit antenna with CRS, +3dB for 2 transmit antennas with CRS

N/A: Not Applicable

A.3.2.1.16 OCNG FDD pattern 16: full bandwidth allocation in 5 MHz

Table A.3.2.1.16-1: OP.16 FDD: OCNG FDD Pattern 16

Allocation	Re	lative power I	evel $\gamma_{\it PRB}$ [d	B]	PDSCH Data	PMCH Data
$n_{\it PRB}$		Data	Data			
	0	5	4, 9	1 - 3, 6 - 8		

0 -	24	0	0	0	N/A	Note 1	N/A	
0 –	24	N/A	N/A	N/A	Note 4	N/A	Note 2	
Note 1:		hysical resource						
	with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter							
	${\gamma}_{{\scriptscriptstyle PRB}}$ is	used to scale th	ne power of PD	DSCH.				
Note 2:	Each physical resource block (PRB) is assigned to MBSFN transmission. The data in each PRB shall be uncorrelated with data in other PRBs over the period of any measurement. The MBSFN data shall be QPSK modulated. PMCH subframes shall contain cell-specific Reference Signals only in the first symbol of the first time slot.							
	The para	ameter $\gamma_{\it PRB}$ is (used to scale t	he power of P	MCH.			
Note 3:		more transmit a						
	and acco	ording to the an	tenna transmi	ssion mode 2.	The paramete	er $\gamma_{_{PRB}}$ app	olies to	
Note 4:	equal be transmis	tenna port sepa etween all the tr sion modes are 1 transmit anter	ansmit antenn specified in s	as with CRS u ection 7.1 in 3	sed in the test GPP TS 36.21	. The anter	nna	

A.3.2.1.17 OCNG FDD pattern 17: outer resource blocks allocation in 20 MHz with user data in every subframe (without MBSFN)

Table A.3.2.1.17-1: OP.17 FDD: OCNG FDD Pattern 17

Allocatio	n	3]	PDSCH Data				
$n_{\it PRB}$	n _{PRB} Subframe (Note 1)						
		0	5	4, 9	1 - 3, 6 - 8		
0 - 37		0	0	0	0	Note 2	
62 - 99		0	0	0	0	Note 2	
					IB1 applies on	ly to the subframes	
		configured as F					
Note 2:	Note 2: These physical resource blocks are assigned to an arbitrary number of virtual						
	UEs with one PDSCH per virtual UE; the data transmitted over the OCNG						
	PD	SCHs shall be u	uncorrelated p	seudo random	data, which is	S QPSK modulated.	

The parameter γ_{PRB} is used to scale the power of PDSCH.

Note 3: If two or more transmit antennas with CRS are used in the test, the PDSCH part of OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter

 γ_{PRB} applies to each antenna port separately, so the transmit power of the PDSCH part of OCNG is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.

N/A: Not Applicable.

N/A: Not Applicable

PDSCH

N/A:

Allocation

Not Applicable

OCNG FDD pattern 18: outer resource blocks allocation in 5 MHz (without A.3.2.1.18 MBSFN)

Table A.3.2.1.18-1: OP.18 FDD: OCNG FDD Pattern 18

Alloc		Re	B]	PDSCH Data		
n_P	RB		Subframe	(Note 1)		Data
		0	5	4,9	1-3, 6-8	
0 -	- 6	0	0	0	N/A	
18 –	- 24	0	0	0	N/A	Note 2
0 –	24	N/A	N/A	N/A	0	
Note 1: Note 2:	subfram These p virtual U OCNG F	cation of any Ples not configure hysical resource IEs with one PEPDSCHs shall be	ed as PRS sub e blocks are as OSCH per virtus be uncorrelated	oframes. ssigned to an a al UE; the data d pseudo rando	arbitrary numb a transmitted com data, which	er of over the n is
Note 3:	PDSCH If two or PDSCH	nodulated. The more transmit part of OCNG antennas with	antennas with shall be transn	CRS are used	in the test, the tual users by	e all the
	the trans transmit	The parameter smit power of the antennas with are specified in	ne PDSCH par CRS used in tl	t of OCNG is e he test. The ar	equal between ntenna transm	all the

OCNG FDD pattern 19: full bandwidth allocation in 5 MHz (without MBSFN) A.3.2.1.19

Table A.3.2.1.19-1: OP.19 FDD: OCNG FDD Pattern 19

Alloc		Relative power level $\gamma_{\it PRB}$ [dB]					
n_P	RB		Data				
		0	5	4, 9	1 - 3, 6 - 8		
0 –	24	0	0	0	0	Note 2	
Note 1:		cation of any PI			pplies only to	the	
Note 2:	subframes not configured as PRS subframes. These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is						
		nodulated. The	parameter $\gamma_{\scriptscriptstyle I}$	$ ho_{RB}$ is used to s	scale the powe	er of	
Note 3:	PDSCH	more transmit a part of OCNG santennas with	shall be transn	nitted to the vir	tual users by a	all the	
	mode 2.	The parameter	$\gamma_{\it PRB}$ applies	to each anten	na port separa	ately, so	
	the transmit power of the PDSCH part of OCNG is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.						
N/A:	Not App	licable					

A.3.2.1.20 OCNG FDD pattern 20: outer resource blocks allocation in 5 MHz with user data in every subframe (without MBSFN)

Table A.3.2.1.20-1: OP.20 FDD: OCNG FDD Pattern 20

			ative power le	evel $\gamma_{{\scriptscriptstyle PRB}}$ [dE	3]	PDSCH Data	
$n_{\it PRB}$			Subframe	(Note 1)			
		0	5	4, 9	1 - 3, 6 - 8		
0 - 6		0	0	0	0	Note 2	
18 - 24	1	0	0	0	0	NOIG Z	
Note 1: The allocation of any PDSCH with or without SIB1 applies only to the subframes not configured as PRS subframes.							
Note 2:	These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated.						
Note 3:	The parameter γ_{PRB} is used to scale the power of PDSCH. Note 3: If two or more transmit antennas with CRS are used in the test, the PDSCH part of OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter						
	γ_{PRB} applies to each antenna port separately, so the transmit power of the PDSCH part of OCNG is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPF TS 36.213.						
N/A:	Not	Applicable.					

A.3.2.2 OCNG Patterns for TDD

The following OCNG patterns are used for modelling allocations to virtual UEs (which are not under test). The OCNG pattern for each sub frame specifies the allocations that shall be filled with OCNG, and furthermore, the relative power level of each such allocation.

In each test case the OCNG is expressed by parameters OCNG_RA and OCNG_RB which together with a relative power level (γ) specifies the PDSCH EPRE-to-RS EPRE ratios in OFDM symbols without and with reference symbols, respectively. The relative power, which is used for modelling boosting per virtual UE allocation, is expressed by:

$$\gamma_i = PDSCH_i RA/OCNG RA = PDSCH_i RB/OCNG RB,$$

where γ_i denotes the relative power level of the *i:th* virtual UE. The parameter settings of OCNG_RA, OCNG_RB, and the set of relative power levels γ are chosen such that when also taking allocations to the UE under test into account, as given by a PDSCH reference channel, a transmitted power spectral density that is constant on an OFDM symbol basis is targeted.

Moreover the OCNG pattern is accompanied by a PCFICH/PDCCH/PHICH reference channel which specifies the control region. The number of PDCCH OFDM symbols in the non-MBSFN subframes is the same as specified in the RMC used in the test. The number of PDCCH OFDM symbols in the MBSFN subframe is the maximal allowed according to TS 36.213 [16]. For any aggregation and PHICH allocation, the PDCCH and any unused PHICH groups are padded with resource element groups with a power level given by PDCCH_RA/RB and PHICH_RA/RB as specified in the test case such that a total power spectral density in the control region that is constant on an OFDM symbol basis is targeted.

For subframes configured as PRS subframes the PDSCH allocation defined in the OCNG pattern does not apply.

For subframes configured as ABS subframes the PDSCH and PMCH allocation defined in the OCNG pattern does not apply.

The system information is scheduled in the allocations reserved for the OCNG patterns, in the subframes not configured for MBSFN. For this purpose the number of the RB-s allocated with PDSCH defined in the OCNG pattern can be reduced as necessary.

A.3.2.2.1 OCNG TDD pattern 1: outer resource blocks allocation in 10 MHz

Table A.3.2.2.1-1: OP.1 TDD: OCNG TDD Pattern 1 for 5ms downlink-to-uplink switch-point periodicity

Allocation		Relative power level $\gamma_{{\scriptscriptstyle PRB}}$ [dB]						
$n_{\it PRB}$		Subframe (Note 1)					
	0	5	3 , 4, 8, 9 and 6 (as normal subframe) Note 3	1 and 6 (as special subframe)				
0 – 12	0	0	0	Table	Nata 0			
37 – 49	0	0	0	A.3.2.2.1-2	Note 2			

- Note 1: The allocation of any PDSCH with or without SIB1 applies only to the subframes not configured as PRS subframes.
- Note 2: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated The parameter γ_{PRB} is used to scale the power of PDSCH.
- Note 3: Subframes available for DL transmission depends on the Uplink-Downlink configuration defined in Table 4.2-2 in TS 36.211 [16].
- Note 4: If two or more transmit antennas with CRS are used in the test, the OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in clause 7.1 in TS 36.213.

Table A.3.2.2.1-2: OP.1 TDD: OCNG TDD Pattern 1 for special subframe configuration with 5ms downlink-to-uplink switch-point periodicity

Allocation		Relative power level $\gamma_{\scriptscriptstyle PRB}$ [dB]							
$n_{\it PRB}$			Sı	oecial sub	frame cor	nfiguration	1		
	0	1	2	3	4	5	6	7	8
		Control region OFDM symbols							
	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
0 – 12	0	0	0	0	0	0	0	0	0
0 – 12	U	U	U	U	U	U	U	\searrow	\setminus
37 – 49	0	0	0	0	0	0	0	0	0
31 – 49	U	U	U	U	U	U	U	> <	$>\!\!<$
Note 1: Special su	bframe con	ifigurations	are defined	l in Table 4	1.2-1 in TS	36.211 [10	6].		

A.3.2.2.2 OCNG TDD pattern 2: full bandwidth allocation in 10 MHz

Table A.3.2.2.2-1: OP.2 TDD: OCNG TDD Pattern 2 for 5ms downlink-to-uplink switch-point periodicity

Allocation		Relative power level $\gamma_{\it PRB}$ [dB]						
$n_{{\scriptscriptstyle PRB}}$								
	0	5	3 , 4, 8, 9 and 6 (as normal subframe) ^{Note 3}	1 and 6 (as special subframe)				

TS 36.213.

() – 49	0	0	0	0	Note 2		
Note 1: The allocation of any PDSCH with or without SIB1 applies only to the subframes not configured as PRS subframes.								
Note 2:	Note 2: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK							
	modulated. T	The parameter $\gamma_{\scriptscriptstyle PR}$	$_{ m g}$ is used to scale the p	ower of PDSCH.				
Note 3:	Subframes at 36.211 [16].	vailable for DL trar	nsmission depends on	the Uplink-Downlink co	onfiguration in Ta	able 4.2-2 in TS		
Note 4:	• •							
	parameter γ_{PRB} applies to each antenna port separately, so the transmit power is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in clause 7.1 in							

A.3.2.2.3 OCNG TDD pattern 3: outer resource blocks allocation in 1.4 MHz

Table A.3.2.2.3-1: OP.3 TDD: OCNG TDD Pattern 3 for 5 ms downlink-to-uplink switch-point periodicity

Allocation		PDSCH Data						
$n_{\it PRB}$		Subframe (Note 1)						
	0	5	3, 4, 8, 9 and 6 (as normal subframe) Note 3	1 and 6 (as special subframe)				
0 – 1	0	0	0	0				
4 – 5	0	0	0	0	Note 2			

- Note 1: The allocation of any PDSCH with or without SIB1 applies only to the subframes not configured as PRS subframes.
- Note 2: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter γ_{PRB} is used to scale the power of PDSCH.
- Note 3: Subframes available for DL transmission depends on the Uplink-Downlink configuration defined in Table 4.2-2 in TS 36.211 [16].
- Note 4: If two or more transmit antennas with CRS are used in the test, the OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in clause 7.1 in TS 36.213.

A.3.2.2.4 OCNG TDD pattern 4: full bandwidth allocation in 1.4 MHz

Table A.3.2.2.4-1: OP.4 TDD: OCNG TDD Pattern 4 for 5 ms downlink-to-uplink switch-point periodicity

Allocation		Relative power level $\gamma_{\it PRB}$ [dB]						
$n_{\it PRB}$								
	0	5	3 , 4, 8, 9 and 6 (as normal subframe)	1 and 6 (as special subframe)				

TS 36.213.

	0 – 5	0	0	0	0	Note 2			
Note 1:	The allocation of any PDSCH with or without SIB1 applies only to the subframes not configured as PRS subframes.								
Note 2:				bitrary number of virtual all be uncorrelated pse					
	modulated.Th	ne parameter $\gamma_{{\scriptscriptstyle PRB}}$	is used to scale the po	ower of PDSCH.					
Note 3:	Subframes av 36.211 [16].	vailable for DL trar	nsmission depends on	the Uplink-Downlink co	onfiguration in Ta	ble 4.2-2 in TS			
Note 4:				n the test, the OCNG s rding to the antenna tra					
		TLD		ely, so the transmit po					

A.3.2.2.5 OCNG TDD pattern 5: outer resource blocks allocation in 10 MHz for MBSFN ABS

Table A.3.2.2.5-1: OP.5 TDD: OCNG TDD Pattern 5 for 5ms downlink-to-uplink switch-point periodicity

Allocation		Relative power level $\gamma_{\scriptscriptstyle PRB}$ [dB]								
$n_{\it PRB}$		Subframe (Note 1)							
	0	5	3 , 4, 8, 9 and 6 (as normal subframe) Note 3	1 and 6 (as special subframe)						
0 – 12	0	0	0	Table	Nata 0					
37 – 49	0	0	0	A.3.2.2.1-2	Note 2					

- Note 1: PDSCH allocation does not apply to subframes configured as PRS subframes.
- Note 2: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated The parameter γ_{PRB} is used to scale the power of PDSCH.
- Note 3: Subframes available for DL transmission depends on the Uplink-Downlink configuration defined in Table 4.2-2 in TS 36.211 [16]. Any of the subframes 3, 4, 8 and 9 configured as MBSFN ABS in a test shall not contain any PMCH data and shall contain CRS only in the first symbol of the first time slot. The subframe(s) configured as MBSFN ABS depend upon the MBSFN ABS pattern used in the test.
- Note 4: If two or more transmit antennas with CRS are used in the test, the OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in clause 7.1 in TS 36.213.

Table A.3.2.2.5-2: OP.5 TDD: OCNG TDD Pattern 5 for special subframe configuration with 5ms downlink-to-uplink switch-point periodicity

Allocation		Relative power level $\gamma_{\scriptscriptstyle PRB}$ [dB]									
$n_{\it PRB}$		Special subframe configuration									
	0	1	2	3	4	5	6	7	8		
		Control region OFDM symbols									
	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2		
0 – 12	0	0	0	0	0	0	0	0	0		
0 - 12	U	U	U	U	U	U	U	><	><		
37 – 49	0	0	0	0	0	0	0	0	0		
37 - 49	U	U	U	U	U	U	U	><	><		
Note 1: Special	l subframe d	configuration	ons are defir	ned in Tab	le 4.2-1 in	TS 36.211	[16].				

A.3.2.2.6 OCNG TDD pattern 6: full bandwidth allocation in 10 MHz for MBSFN ABS

Table A.3.2.2.6-1: OP.6 TDD: OCNG TDD Pattern 6 for 5ms downlink-to-uplink switch-point periodicity

Allocation		Relative power level γ_{PRB} [dB]								
n_{PRB}		Subframe	(Note 1)							
	0	5	3 , 4, 8, 9 and 6 (as normal subframe) ^{Note 3}	1 and 6 (as special subframe) Note 3						
0 – 49	0	0	0	0	Note 2					

- Note 1: PDSCH allocation does not apply to subframes configured as PRS subframes.
- Note 2: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter γ_{PRR} is used to scale the power of PDSCH.
- Note 3: Subframes available for DL transmission depends on the Uplink-Downlink configuration in Table 4.2-2 in TS 36.211 [16]. Any of the subframes 3, 4, 8 and 9 configured as MBSFN ABS in a test shall not contain any PMCH data and shall contain CRS only in the first symbol of the first time slot. The subframe(s) configured as MBSFN ABS depend upon the MBSFN ABS pattern used in the test.
- Note 4: If two or more transmit antennas with CRS are used in the test, the OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in clause 7.1 in TS 36.213.

A.3.2.2.7 OCNG TDD pattern 7: outer resource blocks allocation in 20 MHz

Table A.3.2.2.7-1: OP.7 TDD: OCNG TDD Pattern 7 for 5ms downlink-to-uplink switch-point periodicity

Allocation		Relative power le	vel $\gamma_{\it PRB}$ [dB]		PDSCH Data
$n_{\it PRB}$		Subframe ((Note 1)		
	0	5	3 , 4, 8, 9 and 6 (as normal subframe) Note 3	1 and 6 (as special subframe)	
0 – 37	0	0	0	Table	N . O
62 – 99	0	0	0	A.3.2.1.7-2	Note 2

- Note 1: The allocation of any PDSCH with or without SIB1 applies only to the subframes not configured as PRS subframes.
- Note 2: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated The parameter γ_{PRB} is used to scale the power of PDSCH.
- Note 3: Subframes available for DL transmission depends on the Uplink-Downlink configuration defined in Table 4.2-2 in 3GPP TS 36.211 [16].
- Note 4: If two or more transmit antennas with CRS are used in the test, the OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.

Table A.3.2.2.7-2: OP.7 TDD: OCNG TDD Pattern 7 for special subframe configuration with 5ms downlink-to-uplink switch-point periodicity

Allocation	£		Relative power level $\gamma_{_{PRB}}$ [dB]																
n_{PRB}	length		Special subframe configuration																
	<u>•</u>	(0		1		2	;	3		4	,	5	(3	7	7	8	3
	<u>ი</u>						C	ontro	ol reg	jion (OFDN	1 sym	nbols						
		1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
0 – 37	N		n		n		n		1		Λ		0	(1	()	()
0 – 37		,	<u> </u>	,	<u> </u>	,	0	,	J		0		0	,	,	>	<	\geq	<
62 – 99	N		n		n	١.,	Λ		n		Λ	١.,	0		1	()	()
02 – 99		,	0	'	0		U	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	<u> </u>		U		0	,	,	>	<	\geq	<
Note 1: Special	subfram	e con	nfigura	ations	are c	lefine	d in Ta	able 4	1.2-1	in TS	36.2	11 [16	6].						

A.3.2.2.8 OCNG TDD pattern 8: full bandwidth allocation in 20 MHz

Table A.3.2.2.8-1: OP.8 TDD: OCNG TDD Pattern 8 for 5ms downlink-to-uplink switch-point periodicity

Allocation		Relative power level $\gamma_{\it PRB}$ [dB]								
n_{PRB}		Subframe	(Note 1)							
	0	5	3 , 4, 8, 9 and 6 (as normal subframe) ^{Note 3}	1 and 6 (as special subframe) Note 3						
0 – 99	0	0	0	0	Note 2					

- Note 1: The allocation of any PDSCH with or without SIB1 applies only to the subframes not configured as PRS subframes
- Note 2: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated. The parameter γ_{PRB} is used to scale the power of PDSCH.
- Note 3: Subframes available for DL transmission depends on the Uplink-Downlink configuration in Table 4.2-2 in 3GPP TS 36.211 [16].
- Note 4: If two or more transmit antennas with CRS are used in the test, the OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.

A.3.2.2.9 OCNG TDD pattern 9: outer resource blocks allocation in 5 MHz

Table A.3.2.2.9-1: OP.9 TDD: OCNG TDD Pattern 9 for 5ms downlink-to-uplink switch-point periodicity

Allocation		PDSCH Data			
n_{PRB}		Subfr	ame (Note 1)		
	0	5	3 , 4, 8, 9 and 6 (as normal subframe) Note 3	1 and 6 (as special subframe) Note 3	
0 – 6	0	0	0	Table A.3.2.1.7-	Note O
18 – 24	0	0	0	2	Note 2

- Note 1: The allocation of any PDSCH with or without SIB1 applies only to the subframes not configured as PRS subframes.
- Note 2: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated pseudo random data, which is QPSK modulated The parameter γ_{PRB} is used to scale the power of PDSCH.
- Note 3: Subframes available for DL transmission depends on the Uplink-Downlink configuration defined in Table 4.2-2 in 3GPP TS 36.211 [16].
- Note 4: If two or more transmit antennas with CRS are used in the test, the OCNG shall be transmitted to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.

Table A.3.2.2.9-2: OP.9 TDD: OCNG TDD Pattern 9 for special subframe configuration with 5ms downlink-to-uplink switch-point periodicity

Allocation	ج		Relative power level γ_{PRB} [dB]									
$n_{\it PRB}$	length		Special subframe configuration									
	<u>•</u>	0	1	2	3	4	5	6	7	8		
	<u> </u>			С	ontrol reg	ion OFDN	l symbols					
		1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2		
0 – 6	N	0	0	0	0	0	0	0	0	0		
0 - 6		U	U	U	U	U	U	U	$>\!\!<$	$>\!\!<$		
18 – 24	N	0	0	0	0	0	0	0	0	0		
10 - 24		U	U	U	U	U	U	0	$>\!\!<$	$>\!\!<$		
Note 1: Specia	l subfram	e configura	ations are c	defined in Ta	able 4.2-1	in TS 36.2	11 [16].		•	·		

A.3.2.2.10 OCNG TDD pattern 10: full bandwidth allocation in 5 MHz

Table A.3.2.2.10-1: OP.10 TDD: OCNG TDD Pattern 10 for 5ms downlink-to-uplink switch-point periodicity

Allocation	on		Relative p	ower level $\gamma_{\it PRB}$ [dB]		PDSCH Data		
$n_{\it PRB}$				Data				
		0	5	3 , 4, 8, 9 and 6 (as normal subframe) ^{Note 3}	1 and 6 (as special subframe)			
0 – 24		0	0	0	0	Note 2		
Note 1: The allocation of any PDSCH with or without SIB1 applies only to the subframes not configured as PRS subframes. Note 2: These physical resource blocks are assigned to an arbitrary number of virtual UEs with one PDSCH per virtual UE; the data transmitted over the OCNG PDSCHs shall be uncorrelated								
Note 3:	pov	ver of PDSCH.		K modulated. The para	, TRD			

Table 4.2-2 in 3GPP TS 36.211 [16].

Note 4: If two or more transmit antennas with CRS are used in the test, the OCNG shall be transmitted to the virtual years by all the transmit antennas with CRS and according to the entennas.

to the virtual users by all the transmit antennas with CRS and according to the antenna transmission mode 2. The parameter γ_{PRB} applies to each antenna port separately, so the transmit power is equal between all the transmit antennas with CRS used in the test. The antenna transmission modes are specified in section 7.1 in 3GPP TS 36.213.

A.3.3 Reference DRX Configurations

Table A.3.3-1: Reference DRX Configurations

Parameter	Va	lue	Comments
Reference configuration	DRX_S	DRX_L	As defined in 4.8.2.1.5 in TS 36.508
onDurationTimer	psf2	psf6	
drx-InactivityTimer	psf100	psf1920	
drx-RetransmissionTimer	psf16	psf16	
longDRX-CycleStartOffset	sf40, 0	sf1280, 0	
shortDRX	disabled	disabled	
Note: For further information see cla	use 6.3.2 in TS	36.331.	

A.3.4 ABS Transmission Configurations

A.3.4.1 Non-MBSFN ABS Transmission Configurations

A.3.4.1.1 Non-MBSFN ABS Transmission, 1x2 antenna with PBCH

Table A.3.4.1.1-1: Transmission configuration with non-MBSFN ABS, 1x2 with PBCH

Physical	Parameters	EPRE	E, [dB]
Channels and Signals		Non-ABS	ABS
PBCH	PBCH_RA	0	0
РВСП	PBCH_RB	0	0
PSS	PSS_RA	0	0
SSS	SSS_RA	0	0
PCFICH	PCFICH_RB	0	0 Note 1
PHICH	PHICH_RA	0	-Inf
FILCH	PHICH_RB	0	-Inf
PDCCH	PDCCH_RA	0	0 Note 1
РИССП	PDCCH_RB	0	0 Note 1
DDCCII	PDSCH_RA	0	0 Note 1
PDSCH	PDSCH_RB	0	0 Note 1
OCNC	OCNG_RA	0	-Inf
OCNG	OCNG_RB	0	-Inf
NOTE 1: Only used	d for SIB1, otherwis	se EPRE is –In	ıf

NOTE 1. Only used for SIBT, otherwise EPRE is –Init NOTE 2: 1x2 antenna configuration is assumed

A.3.4.1.2 Non-MBSFN ABS Transmission, 2x2 antenna without PBCH

Table A.3.4.1.2-1: Transmission configuration #1 with non-MBSFN ABS, 2x2 without PBCH

Physical		EPRE	E, [dB]
Channels and Signals	Parameters	Non-ABS	ABS
PBCH	PBCH_RA	-3	-Inf
FBCIT	PBCH_RB	-3	-Inf
PSS	PSS_RA	-3	-3
SSS	SSS_RA	-3	-3
PCFICH	PCFICH_RB	1	-Inf
PHICH	PHICH_RA	-3	-Inf
FILCH	PHICH_RB	-3	-Inf
PDCCH	PDCCH_RA	1	-Inf
PDCCH	PDCCH_RB	1	-Inf
PDSCH	PDSCH_RA	-3	-Inf
РОЗСП	PDSCH_RB	-3	-Inf
OCNG	OCNG_RA	-3	-Inf
OCING	OCNG_RB	-3	-Inf
NOTE: 2x2 anten	na configuration is	assumed	

Table A.3.4.1.2-2: Transmission configuration #2 with non-MBSFN ABS, 2x2 without PBCH

Physical		EPRE	E, [dB]
Channels and Signals	Parameters	Non-ABS	ABS
PBCH	PBCH_RA	-3	-Inf
FBCII	PBCH_RB	-3	-Inf
PSS	PSS_RA	-3	-3
SSS	SSS_RA	-3	-3
PCFICH	PCFICH_RB	1	-Inf
PHICH	PHICH_RA	-3	-Inf
FILCH	PHICH_RB	-3	-Inf
PDCCH	PDCCH_RA	-3	-Inf
РИССП	PDCCH_RB	-3	-Inf
PDSCH	PDSCH_RA	-3	-Inf
РОЗСП	PDSCH_RB	-3	-Inf
OCNG	OCNG_RA	-3	-Inf
OCING	OCNG_RB	-3	-Inf
NOTE: 2x2 anteni	na configuration is	assumed	

A.3.4.2 MBSFN ABS Transmission Configurations

A.3.4.2.1 MBSFN ABS Transmission, 1x2 antenna

Table A.3.4.2.1-1: Transmission configuration with MBSFN ABS, 1x2

Physical		EPRI	E, [dB]
Channels and Signals	Parameters	Non-ABS	ABS
PBCH	PBCH_RA	0	N/A
PBCH	PBCH_RB	0	N/A
PSS	PSS_RA	0	N/A
SSS	SSS_RA	0	N/A
PCFICH	PCFICH_RB	0	-Inf
DUIOU	PHICH_RA	0	-Inf
PHICH	PHICH_RB	0	-Inf
DDCCII	PDCCH_RA	0	-Inf
PDCCH	PDCCH_RB	0	-Inf
DDCCII	PDSCH_RA	0	-Inf
PDSCH	PDSCH_RB	0	-Inf
PMCH	PMCH_RA	0	-Inf
PIVICH	PMCH_RB	0	-Inf
CONO	OCNG_RA	0	-Inf
OCNG	OCNG_RB	0	-Inf
NOTE: 1x2 anter	nna configuration is	assumed	

A.3.4.2.2 MBSFN ABS Transmission, 2x2 antenna

Table A.3.4.2.2-1: Transmission configuration #1 with MBSFN ABS, 2x2

Physical		EPRE	E, [dB]
Channels and Signals	Parameters	Non-ABS	ABS
PBCH	PBCH_RA	-3	N/A
РВСП	PBCH_RB	-3	N/A
PSS	PSS_RA	-3	N/A
SSS	SSS_RA	-3	N/A
PCFICH	PCFICH_RB	1	-Inf
PHICH	PHICH_RA	-3	-Inf
PRICE	PHICH_RB	-3	-Inf
PDCCH	PDCCH_RA	1	-Inf
PDCCH	PDCCH_RB	1	-Inf
PDSCH	PDSCH_RA	-3	-Inf
PDSCH	PDSCH_RB	-3	-Inf
DMCH	PMCH_RA	-3	-Inf
PMCH	PMCH_RB	-3	-Inf
OCNG	OCNG_RA	-3	-Inf
OCING	OCNG_RB	-3	-Inf
NOTE: 2x2 anten	na configuration is	assumed	

Table A.3.4.2.2-2: Transmission configuration # 2 with MBSFN ABS, 2x2

Physical		EPRE, [dB]		
Channels and Signals	Parameters	Non-ABS	ABS	
PBCH	PBCH_RA	-3	N/A	
РВСП	PBCH_RB	-3	N/A	
PSS	PSS_RA	-3	N/A	
SSS	SSS_RA	-3	N/A	
PCFICH	PCFICH_RB	1	-Inf	
PHICH	PHICH_RA	-3	-Inf	
PHICH	PHICH_RB	-3	-Inf	
PDCCH	PDCCH_RA	-3	-Inf	
PDCCH	PDCCH_RB	-3	-Inf	
PDSCH	PDSCH_RA	-3	-Inf	
РИЗСП	PDSCH_RB	-3	-Inf	
PMCH	PMCH_RA	-3	-Inf	
FIVICH	PMCH_RB	-3	-Inf	
OCNIC	OCNG_RA	-3	-Inf	
OCNG	OCNG_RB	-3	-Inf	
NOTE: 2x2 anten	na configuration is	assumed		

A.3.5 Impact of Reference Sensitivity Degradation with Carrier Aggregation on Test Cases

A.3.5.1 Impact of Reference Sensitivity Degradation due to Insertion Loss

For a UE supporting inter-band carrier aggregation configuration with uplink in one E-UTRA band, if there is a relaxation of receiver sensitivity $\Delta R_{IB,c} > 0$ dB as defined in TS 36.101 [5], 7.3.1-1A, there is no adjustment of test parameters in the tests specified in TS 36.133 when $\Delta R_{IB,c} \le 1$ dB.

A.3.6 Carrier Aggregation Test Cases with Different Channel Bandwidth Combinations

A.3.6.1 Introduction

In Annex A carrier aggregation test cases may be defined with different channel bandwidth combinations to verify the same RRM requirement.

If multiple carrier aggregation test cases with different channel bandwidth combinations are defined to verify the same RRM requirement that is channel bandwidth independent, then the UE needs to be tested only with one bandwidth combination out of the bandwidth combination sets supported by that UE.

A.3.7 Test Cases with Different Channel Bandwidths

A.3.7.1 Introduction

This clause defines a principle which is applicable to test cases verifying RRM requirements for single carrier operation.

A.3.7.2 Principle of testing

Test cases defined for 5MHz channel bandwidth that reference this clause are applicable to UEs that support only Band 31.

A.3.8 Antenna Configuration

Unless otherwise specified, RRM Test cases in AWGN propagation condition are configured with Antenna Configuration 1x2.

A.3.9 Carrier Aggregation Test Cases with Different Duplex Modes

A.3.9.1 Introduction

This clause defines a principle which is applicable to test cases verifying RRM requirements for carrier aggregation.

A.3.9.2 Principle of testing

In Annex A carrier aggregation test cases may be defined for different duplex modes or combination of duplex modes (E-UTRA FDD, E-UTRA TDD and E-UTRA TDD-FDD) to verify the same RRM requirement.

If multiple carrier aggregation test cases are defined for different duplex modes (E-UTRA FDD or E-UTRA TDD) or for combination of duplex modes (E-UTRA TDD-FDD) to verify the same RRM requirement which is independent of the duplex mode and is identical for different duplex modes or combination of duplex modes, then from UE the performance point of view the test coverage can be considered fulfilled by executing only the corresponding test case(s) with one of the duplex modes supported by the UE.

A.3.10 Carrier Aggregation Test Cases with Different CA Configurations

A.3.10.1 Introduction

This clause defines a principle which is applicable to test cases verifying RRM requirements for carrier aggregation.

A.3.10.2 Principle of testing

In Annex A carrier aggregation test cases may be defined for two CCs as well as for more than two CCs to verify the same RRM requirement.

If multiple carrier aggregation test cases are defined for two CCs as well as for more than two CCs to verify the same RRM requirement, then from the UE performance point of view the test coverage can be considered fulfilled by executing only the test cases with the maximum number of CCs supported by the UE.

Editor's note: whether it is sufficient to test for any one of the band combinations supported by the UE is FFS.

A.3.11 Test Cases for Synchronous and Asynchronous Dual Connectivity

A.3.11.1 Introduction

This clause defines a principle which is applicable to test cases verifying RRM requirements for dual connectivity (DC) operation in synchronous and asynchronous scenarios.

A.3.11.2 Principle of Testing

In Annex A test cases may be defined in both synchronous DC and asynchronous DC scenarios to verify the same RRM requirement.

If test cases are defined in both synchronous and asynchronous DC scenarios to verify the same RRM requirement then the UE capable of both synchronous and asynchronous DC operations needs to be tested with one of the tests in either synchronous or asynchronous DC scenarios.

A.3.12 Proximity-based Services

A.3.12.1 Introduction

This clause also defines the principle and the reference configurations that are applicable to test cases verifying RRM core requirements for ProSe Direct Discovery and ProSe Direct Communication.

A.3.12.2 Reference DRX configurations for ProSe tests

Table A.3.12.2-1: Reference DRX Configurations

Parameter	Value	
Reference configuration	DRX_P1	
onDurationTimer	psf1	
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf320, 0	
shortDRX Disabled		
Note: For further information see clause 6.3.2 in TS 36.331.		

A.3.12.3 Test Cases with Different Channel Bandwidths

A.3.12.3.1 Introduction

This clause defines a principle which is applicable to test cases verifying ProSe RRM requirements with different channel bandwidths.

A.3.12.3.2 Principle of testing

Some ProSe test cases are defined for different channel bandwidths to verify the same RRM requirement.

If test cases with different channel bandwidth are defined to verify the same RRM requirement then the UE is required to pass the test cases only with one of the channel bandiwdths.

A.3.12.4 Reference resource pool configurations for ProSe Direct Discovery

Table A.3.12.4-1: ProSe Direct Discovery configuration for E-UTRA FDD (Configuration #1)

	Informati	on Element		Value
discRxPool	cp-Len			Normal
	discPeriod			rf32
	numRetx			0
	numRepetition			1
	tf-ResourceConfig	prb-Num		12
		prb-Start		0
		prb-End		23
		offsetIndicator		160
		subframeBitmap		11000000 00000000 00000000 00000000 000000
	txParameters			not present
	rxParameters			not present
discTxPoolCommon	cp-Len			Normal
	discPeriod			rf32
	numRetx			0
	numRepetition			1
	tf-ResourceConfig	prb-Num		2
		prb-Start		3
		prb-End		5
		offsetIndicator		160
		subframeBitmap		1000000 0000000 0000000 0000000 0000000
	txParameters	txParametersGeneral	alpha	al0
			p0	31
		ue- SelectedResourceConfig	poolSelection	random
			txProbability	p100
	rxParameters			not present
discTxPowerInfo	discMaxTxPower			23
SL-SyncConfig	syncCP-Len			Normal
	syncOffsetIndicator			155
	slssid			30
	txParameters	txParametersGeneral	alpha	al0
			p0	31
		syncTxThreshIC		0 (-infinity)
	rxParamsNCell			not present
discInterFreqList				not present

Table A.3.12.4-2: ProSe Direct Discovery configuration for E-UTRA FDD (Configuration #2)

	Information Element		Value
discRxPool	cp-Len		Normal
	discPeriod		rf32
	numRetx		0
	numRepetition		1
	tf-ResourceConfig	prb-Num	12
		prb-Start	0
		prb-End	23
		offsetIndicator	160
		subframeBitmap	11000000 00000000 00000000 00000000 000000
	txParameters		not present
	rxParameters	tdd-Config	not present
		syncConfigIndex	0
discTxPoolCommon			not present
discTxPowerInfo	discMaxTxPower		23
SL-SyncConfig	syncCP-Len		Normal
	syncOffsetIndicator		140
	slssid		30
	txParameters		not present
	rxParamsNCell	physCellId	1
		discSyncWindow	w1
discInterFreqLis			not present

Table A.3.12.4-3: ProSe Direct Discovery configuration for E-UTRA TDD Config 0 (Configuration #3)

	Informati	on Element		Value
discRxPool	cp-Len			Normal
	discPeriod			rf32
	numRetx			0
	numRepetition			1
	tf-ResourceConfig	prb-Num		12
		prb-Start		0
		prb-End		23
		offsetIndicator		163
		subframeBitmap		11000000 00000000 00000000 00000000 00
	txParameters			not present
	rxParameters			not present
discTxPoolCommon	cp-Len			Normal
	discPeriod			rf32
	numRetx			0
	numRepetition			1
	tf-ResourceConfig	prb-Num		2
		prb-Start		3
		prb-End		5
		offsetIndicator		163
		subframeBitmap		10000000 00000000 00000000 00000000 00000
	txParameters	txParametersGeneral	alpha	al0
			p0	31
		ue- SelectedResourceConfig	poolSelection	random
			txProbability	p100
	rxParameters			not present
discTxPowerInfo	discMaxTxPower			23
SL-SyncConfig	syncCP-Len			Normal
	syncOffsetIndicator			158
	slssid			30
	txParameters	txParametersGeneral	alpha	al0
			p0	31
		syncTxThreshIC		0 (-infinity)
	rxParamsNCell			not present
discInterFreqList				not present

A.3.12.5 Reference resource pool configurations for ProSe Direct Communication

Table A.3.12.5-1: ProSe Direct Communication configuration for E-UTRA FDD (Configuration #1)

	Information Eleme	ent		Value (5MHz)	Value (10MHz)
commRxPool	sc-CP-Len			Normal	<u> </u>
	sc-Period			sf40	
	sc-TF-ResourceConfig	prb-Num		12	25
		prb-Start		0	0
		prb-End		23	49
		offsetIndicator		0	
		subframeBitmap		0001100 0000000 0000000 0000000 0000000	0 0 0
	data-CP-Len			Normal	
	dataHoppingConfig	hoppingParameter		0	
	datarioppingcomig	numSubbands		ns1	
		rb-Offset		0	
	ue- SelectedResourceConfig	data-TF- ResourceConfig	prb-Num	12	25
		J	prb-Start	0	0
			prb-End	23	49
			offsetIndicator	0	
			subframeBitmap	0000000 1111111 1111111 1111111 1111111	1 1 1
		trpt-Subset-r12		001	
	rxParametersNCell			not prese	ent
	txParameters			not prese	ent
commTxPoolNormalCommon	sc-CP-Len			Normal	
	sc-Period			sf40	
	sc-TF-ResourceConfig	prb-Num		12	25
		prb-Start		0	0
		prb-End		24	49
		offsetIndicator		0	•
		subframeBitmap		0001100 000000 000000 000000 000000	0 0 0
	data-CP-Len			Normal	
	dataHoppingConfig	hoppingParameter		0	
		numSubbands		ns1	
		rb-Offset		0	
	ue- SelectedResourceConfig	data-TF- ResourceConfig	prb-Num	12	25
			prb-Start	0	0
			prb-End	23	49
			offsetIndicator	0	
			subframeBitmap	0000000 1111111 1111111 1111111 1111111	1 1 1
		trpt-Subset-r12		001	
	rxParametersNCell			not prese	ent
	txParameters	sc-TxParameters	alpha	al0	
			p0	31	
		dataTxParameters	alpha	al0	

			p0	31
SL-SyncConfig	syncCP-Len			Normal
	syncOffsetIndicator			2
	slssid			30
	txParameters	txParametersGeneral	alpha	al0
			p0	31
		syncTxThreshIC		0 (-infinity)
	rxParamsNCell			not present

Table A.3.12.5-2: ProSe Direct Communication pre-configuration for E-UTRAN FDD for out-of-network coverage operation (Configuration #2)

	Information Element			Value (5MHz)	Value (10MHz)
preconfigSync	syncCP-Len-r12			Normal	
	syncOffsetIndicator1			2	
	syncOffsetIndicator2			1	
	syncTxParameters			31	
	syncTxThreshOoC			0 (-110dBr 15kHz)	m /
	filterCoefficient			fc0	
	syncRefMinHyst			dB0	
	syncRefDiffHyst			dB0	
preconfigComm	sc-CP-Len			Normal	
- 7	sc-Period			sf40	
	sc-TF-ResourceConfig	prb-Num		12	25
	9	prb-Start		0	0
		prb-End		23	49
		offsetIndicator		0	
		subframeBitmap		0001100 0000000 0000000 0000000	00 00 00
	data-CP-Len			Normal	
	dataHoppingConfig	hoppingParameter		0	
		numSubbands		ns1	
		rb-Offset		0	•
	ue- SelectedResourceConfig	data-TF- ResourceConfig	prb-Num	12	25
			prb-Start	0	0
			prb-End	23	49
			offsetIndicator	0	
			subframeBitmap	0000000 1111111 1111111 1111111	1 1 1
		trpt-Subset-r12		001	

A.3.12.6 Reference Measurement Channels for ProSe Direct Discovery

A.3.12.6.1 FDD

Table A.3.12.6-1: PSDCH Reference Measurement Channels for FDD

Parameter	Unit	Value				
Reference channel		D.1 FDD				
Channel bandwidth	MHz	5				
Allocated resource blocks		2				
Subcarriers per resource block		12				
Allocated subframes per Discovery period		1				
DFT-OFDM Symbols per subframe (see		11				
note)						
Modulation		QPSK				
Information Bit Payload		232				
Transport block CRC	Bits	24				
Maximum number of HARQ transmissions		1				
Binary Channel Bits (see note)	Bits	528				
NOTE1: PSDCH transmissions are rate-matched for 12 DFT-OFDM						
symbols per subframe, and the last symbol shall be						
punctured as per TS 36.211.						

A.3.12.7 Reference measurement channels for ProSe Direct Communication

A.3.12.7.1 FDD

Table A.3.12.7-1: PSCCH Reference Measurement Channels for FDD

	Parameter	Unit	Val	ue			
Reference ch	annel		CC.1 FDD	CC.2 FDD			
Channel band	dwidth	MHz	5	10			
Allocated res	ource blocks		1	1			
Subcarriers p	er resource block		12	12			
DFT-OFDM S (see Note 1)	Symbols per subframe		11	11			
Modulation			QPSK	QPSK			
Information B	it Payload	Bits	41	43			
	Frequency hopping flag		0				
	RB assignment		Set as per PSSCH RB allocation specific in the test				
Information	Time resource pattern (I _{TRP})		0 (Note 2)				
bits	Modulation and coding scheme		Set as the PSSCH MCS specified in the test				
	Timing advance indication		0				
	Group destination ID		As set by higher layers				
Transport blo	ck CRC	Bits	16	16			
Maximum nu	mber of HARQ transmissions		2	2			
Binary Chann	nel Bits (see Note 1)	Bits	264	264			
NOTE1: PSCCH transmissions are rate-matched for 12 DFT-OFDM symbols per subframe, and the last symbol shall be punctured as per TS 36.211.							
	NOTE 2: For $N_{TRP} = 8$ (FDD) and $trpt$ -Subset = 001, $I_{TRP} = 0$ corresponds to a time repetition pattern of $(1,0,0,0,0,0,0,0)$ as per TS 36.213.						

Table A.3.12.7-1: PSSCH Reference Measurement Channels for FDD

Parameter	Unit	Val	ue			
Reference channel		CD.1 FDD	CD.2 FDD			
Channel bandwidth	MHz	5	10			
Allocated resource blocks		2	3			
Subcarriers per resource block		12	12			
DFT-OFDM Symbols per subframe (see Note 1)		11	11			
Modulation		QPSK	QPSK			
Target Code Rate		1/3	1/3			
Information Bit Payload		176	256			
Transport block CRC	Bits	24	24			
Maximum number of HARQ transmissions		3	3			
Binary Channel Bits (see note)	Bits	528	1056			
NOTE1: PSDCH transmissions are rate-matched for 12 DET-OEDM symbols per						

NOTE1: PSDCH transmissions are rate-matched for 12 DFT-OFDM symbols per subframe, and the last symbol shall be punctured as per TS 36.211.

A.3.12.8 ProSe Receive Traffic Generator

This clause defines the configuration for active Sidelink UEs used to generate receive traffic in ProSe RRM tests.

A.3.12.8.1 ProSe Direct Communication Receive Traffic Generator for FDD

Table A.3.12.8.1-1: Active Sidelink UE configuration for ProSe Direct Communication

Configuration	Configuration		PCP.1.FDD				
	Channel BW		5 or 10				
Number of Active	Number of Active Sidelink UEs per sc-period		lumber of Active Sidelink UEs per sc-period		mber of Active Sidelink UEs per sc-period		5 MHz: 12 10 MHz: 16
	PSCCH RMC (defined in A.3.12.7)		5 MHz: CC.1 FDD 10 MHz: CC.2 FDD				
	PSCCH resource allocation		5MHz: [2i:2i], for Sidelink UE i=0,,11 10MHz:[3i:3i], for Sidelink UE i = 0,, 15				
Active Sidelink UEs	PSSCH RMC (defined in A.3.12.7)		5 MHz: CD.1 FDD 10 MHz: CD.2 FDD				
	PSSCH resource allocation		Non-overlapping RBs 5MHz: [2i:2i+1], for Sidelink UE i = 0,, 11 10MHz:[3i:3i+2], for Sidelink UE i = 0,, 15				
	RSRP	dBm/15kHz	-98				

A.3.12.8.2 ProSe Direct Discovery Receive Traffic Generator for FDD

Table A.3.12.8.2-1: Active Sidelink UE configuration for ProSe Direct Discovery

Configuration			PDP.1.FDD PDP.2.FDD		
Channel BW		MHz		5	
Number of Active subframe	Sidelink UEs per Discovery		12		
Active Sidelink UEs	Sidelink UE Transmissions		PSDCH (RMC D.1 FDD)	PSDCH (RMC D.1 FDD) + SLSS on synchronization subframe	
Resource allocation			Non overlapping RBs in a subframe		
	RSRP	dBm/15kHz	-95		

A.3.13 Time Offset between Cells

A.3.13.1 Introduction

In Annex A in some test cases a parameter called, 'time offset between cells' is used. The meaning of this parameter is defined in this clause.

A.3.13.2 Definition

Unless explicitly stated otherwise, the time offset between cells for a pair of cells is defined as the difference between radio frame start timings of the pair of cells.

A.4 E-UTRAN RRC_IDLE state

A.4.2 Cell Re-Selection

A.4.2.1 E-UTRAN FDD – FDD Intra frequency case

A.4.2.1.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-FDD intra frequency cell reselection requirements specified in clause 4.2.2.3.

The test scenario comprises of 1 E-UTRA FDD carrier and 2 cells as given in tables A.4.2.1.1-1 and A.4.2.1.1-2. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Only Cell 1 is already identified by the UE prior to the start of the test, i.e. Cell 2 is not identified by the UE prior to the start of the test. Cell 1 and Cell 2 belong to different tracking areas. Furthermore, UE has not registered with network for the tracking area containing Cell 2.

Table A.4.2.1.1-1: General test parameters for FDD intra frequency cell reselection test case

	Parameter		Value	Comment
Initial	Active cell		Cell1	
condition	Neighbour cells		Cell2	
T2 end	Active cell		Cell2	
condition	Neighbour cells		Cell1	
Final condition	Visited cell		Cell1	
E-UTRA R	F Channel Number		1	Only one FDD carrier frequency is used.
Channel Ba	andwidth (BW _{channel})	MHz	10	
	t between cells		3 ms	Asynchronous cells
Access Ba	rring Information	-	Not Sent	No additional delays in random access procedure.
PRACH co	nfiguration		4	As specified in table 5.7.1-2 in TS 36.211
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1		S	>7	During T1, Cell 2 shall be powered off, and during the off time the physical cell identity shall be changed, The intention is to ensure that Cell 2 has not been detected by the UE prior to the start of period T2
T2		S	40	T2 need to be defined so that cell re- selection reaction time is taken into account.
Т3		S	15	T3 need to be defined so that cell re- selection reaction time is taken into account.

Table A.4.2.1.1-2: Cell specific test parameters for FDD intra frequency cell reselection test case in AWGN

Parameter	Unit	Cell 1				Cell 2	
		T1	T2	T3	T1	T2	Т3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	MHz		10		10		
OCNG Patterns							
defined in A.3.2.1.2		C	P.2 FDD			OP.2 FDD)
(OP.2 FDD)							
DDOLL DA							
PBCH_RA							
PBCH_RB	-						
PSS_RA	1						
SSS_RA							
PCFICH_RB							
PHICH_RA			_			_	
PHICH_RB	dB		0			0	
PDCCH_RA							
PDCCH_RB							
PDSCH_RA							
PDSCH_RB							
OCNG_RA ^{Note 1}							
OCNG_RB ^{Note 1}						1	
Qrxlevmin	dBm	-140	-140	-140	-140	-140	-140
Pcompensation	dB	0	0	0	0	0	0
Qhyst _s	dB	0	0	0	0	0	0
Qoffset _{s, n}	dB	0	0	0	0	0	0
Cell_selection_and_							
reselection_quality_			RSRP			RSRP	
measurement							
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	dB	16	-3.11	2.79	-infinity	2.79	-3.11
37 Note2	dBm/15 kHz		l		-98		
$N_{oc}^{ m Note2}$	UDIII/ 13 KI1Z				-90		
\hat{E}_s/N_{oc}	dB	16	13	16	-infinity	16	13
RSRP Note3	dBm/15 kHz	-82	-85	-82	-infinity	-82	-85
Treselection	S	0	0	0	0	0	0
Sintrasearch	dB		Not sent	_		Not sent	
Propagation					AWGN		
Condition							

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over

subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.4.2.1.2 Test Requirements

The cell reselection delay to a newly detectable cell is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on Cell 2.

The cell re-selection delay to a newly detectable cell shall be less than 34 s.

The cell reselection delay to an already detected cell is defined as the time from the beginning of time period T3, to the moment when the UE camps on Cell 1, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on Cell 1.

The cell re-selection delay to an already detected cell shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to a newly detectable cell can be expressed as: $T_{detect, EUTRAN_Intra} + T_{SI}$, and to an already detected cell can be expressed as: $T_{evaluateFDD,intra} + T_{SI}$,

Where:

 $T_{detect,EUTRAN_Intra}$ See Table 4.2.2.3-1 in clause 4.2.2.3

T_{evaluateFDD,intra} See Table 4.2.2.3-1 in clause 4.2.2.3

T_{SI} Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 33.28 s, allow 34 s for the cell re-selection delay to a newly detectable cell and 7.68 s, allow 8 s for the cell re-selection delay to an already detected cell in the test case.

A.4.2.2 E-UTRAN TDD – TDD Intra frequency case

A.4.2.2.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-TDD intra frequency cell reselection requirements specified in clause 4.2.2.3.

The test scenario comprises of 1 E-UTRA TDD carrier and 2 cells as given in tables A.4.2.2.1-1 and A.4.2.2.1-2. The test consists of three successive time periods, with time duration of T1, T2, and T3 respectively. Only cell 1 is already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas. Furthermore, UE has not registered with network for the tracking area containing cell 2.

Table A.4.2.2.1-1: General test parameters for TDD intra frequency cell re-selection test case

	Parameter		Value	Comment
Initial	Active cell		Cell1	
condition	Neighbour cells		Cell2	
T2 end	Active cell		Cell2	
condition	Neighbour cells		Cell1	
Final condition	Visited cell		Cell1	
E-UTRA R	F Channel Number		1	Only one TDD carrier frequency is used.
Channel B	andwidth (BW _{channel})	MHz	10	
Time offset	t between cells	μs	3	Synchronous cells
Access Ba	rring Information	-	Not Sent	No additional delays in random access procedure.
Special sul	oframe configuration		6	As specified in table 4.2-1 in TS 36.211
Uplink-dow	nlink configuration		1	As specified in table 4.2-2 in TS 36.211
PRACH co	nfiguration index		53	As specified in table 5.7.1-3 in TS 36.211
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1		S	>7	During T1, Cell 2 shall be powered off, and during the off time the physical cell identity shall be changed, The intention is to ensure that Cell 2 has not been detected by the UE prior to the start of period T2
T2		S	40	T2 need to be defined so that cell re-selection reaction time is taken into account.
T3		S	15	T3 need to be defined so that cell re-selection reaction time is taken into account.

Table A.4.2.2.1-2: Cell specific test parameters for TDD intra frequency cell re-selection test case in AWGN

Parameter	Unit		Cell 1		Cell 2			
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel			1			1		
Number								
BW _{channel}	MHz		10			10		
OCNG Pattern								
defined in A.3.2.2.2		OF	P.2 TDD		OI	P.2 TDD		
(OP.2 TDD)								
PBCH_RA								
PBCH_RB								
PSS_RA	1							
SSS RA	1							
PCFICH_RB	1							
PHICH_RA	1							
PHICH_RB	dB		0		0			
PDCCH_RA	1		•			•		
PDCCH RB	•							
PDSCH_RA	•							
PDSCH_RB	•							
OCNG_RA ^{Note 1}	•							
OCNG_RB ^{Note 1}	†							
Qrxlevmin Qrxlevmin	dBm		-140		-140			
Pcompensation	dB		0		0			
Qhyst _s	dB		0		0			
Qoffset _{s, n}	dB		0		0			
Cell_selection_and_								
reselection_quality_		F	RSRP			RSRP		
measurement								
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	16	-3.11	2.79	-infinity	2.79	-3.11	
$N_{oc}^{ m Note2}$	dBm/15 kHz				98	•	•	
\hat{E}_s/N_{oc}	dB	16	13	16	-infinity	16	13	
RSRP Note3	dBm/15 kHz	-82	-85	-82	-infinity	-82	-85	
Treselection	S	0	0	0	0	0	0	
Sintrasearch	dB	N	ot sent	•	N	lot sent		
Propagation				ΑV	VGN			
Condition				- ••	-			
	be used such that	both cells a	are fully a	allocated	and a cons	tant total		
	power spectral den							
Note 2: Interference						io occur	o d t o	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate

power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.4.2.2.2 Test Requirements

The cell reselection delay to a newly detectable cell is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on Cell 2.

The cell re-selection delay to a newly detectable cell shall be less than 34 s.

The cell reselection delay to an already detected cell is defined as the time from the beginning of time period T3, to the moment when the UE camps on cell 1, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on cell 1.

The cell re-selection delay shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to a newly detectable cell can be expressed as: $T_{\text{detect,EUTRAN_Intra}} + T_{\text{SI-EUTRAN}}$, and to an already detected cell can be expressed as: $T_{\text{evaluate, E-UTRAN_intra}} + T_{\text{SI-EUTRAN}}$,

Where:

T_{detect,EUTRAN_Intra} See Table 4.2.2.3-1 in clause 4.2.2.3

 $T_{evaluate,E-UTRAN\ intra}$ See Table 4.2.2.3-1 in clause 4.2.2.3

T_{SI-EUTRA} Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 33.28 s, allow 34 s for the cell re-selection delay to a newly detectable cell and 7.68 s, allow 8 s for the cell re-selection delay to an already detected cell in the test case.

A.4.2.3 E-UTRAN FDD – FDD Inter frequency case

A.4.2.3.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-FDD inter-frequency cell reselection requirements specified in clause 4.2.2.4.

The test scenario comprises of 2 E-UTRA FDD cells on 2 different carriers as given in tables A.4.2.3.1-1 and A.4.2.3.1-2. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Both cell 1 and cell 2 are already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas and cell 2 is of higher priority than cell 1. Furthermore, UE has not registered with network for the tracking area containing cell 2.

Table A.4.2.3.1-1: General test parameters for FDD-FDD inter frequency cell re-selection test case

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell2	UE shall be forced to cell 2 in the initialisation phase, so that reselection to cell 1 occurs during the first T1 phase
T1 end	Active cell		Cell1	UE shall perform reselection to cell 1 during T1
condition	Neighbour cell		Cell2	
Final condition	Active cell		Cell2	UE shall perform reselection to cell 2 during T3
E-UTRA R	F Channel Number		1, 2	Two FDD carrier frequencies are used.
Time offse	t between cells		3 ms	Asynchronous cells
PRACH co	onfiguration		4	As specified in table 5.7.1-2 in TS 36.211
Access Ba	rring Information	-	Not Sent	No additional delays in random access procedure.
DRX cycle	length	s	1.28	The value shall be used for all cells in the test.
T1		S	15	T1 need to be defined so that cell re-selection reaction time is taken into account.
T2		S	>7	During T2, cell 2 shall be powered off, and during the off time the physical cell identity shall be changed, The intention is to ensure that cell 2 has not been detected by the UE prior to the start of period T3.
T3		S	75	T3 need to be defined so that cell re-selection reaction time is taken into account.

Table A.4.2.3.1-2: Cell specific test parameters for FDD-FDD inter-frequency cell reselection test case in AWGN

Parameter	Unit	(Cell 1		Cell 2			
		T1	T1 T2 T3		T1	T2	T3	
E-UTRA RF Channel		1			2			
number								
BW _{channel}	MHz		10		10			
OCNG Patterns defined in								
A.3.2.1.2 (OP.2 FDD)		OP	.2 FDD			OP.2 FDD		
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB		_					
PHICH_RB	dB	0 0						
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
Qrxlevmin	dBm		-140		-140			
$N_{_{oc}}^{$	dBm/15 kHz				-98			
RSRP Note 3	dBm/15 KHz	-84	-84	-84	-102	-infinity	-86	
\hat{E}_{s}/I_{ot}	dB	14	14	14	-4	-infinity	12	
\hat{E}_s/N_{oc}	dB	14 14 14			-4	-infinity	12	
Treselection _{EUTRAN}	S	0 0						
Snonintrasearch	dB	50				Not sent		
Thresh _{x, high}	dB		48			48		
Thresh _{serving, low}	dB		44		44			
Thresh _{x, low}	dB		50			50		
Propagation Condition	,	AWGN						

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.4.2.3.2 Test Requirements

The cell reselection delay to higher priority is defined as the time from the beginning of time period T3, to the moment when the UE camps on cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on Cell 2.

The cell re-selection delay to higher priority shall be less than 68 s.

The cell reselection delay to lower priority is defined as the time from the beginning of time period T1, to the moment when the UE camps on cell 1, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on cell 1.

The cell re-selection delay to lower priority shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to higher priority cell can be expressed as: $T_{higher_priority_search} + T_{evaluateFDD,inter} + T_{SI}$, and to lower priority cell can be expressed as: $T_{evaluateFDD,inter} + T_{SI}$,

Where:

 $T_{higher_priority_search}$ See clause 4.2.2

T_{evaluateFDD,inter} See Table 4.2.2.4-1 in clause 4.2.2.4

T_{SI} Maximum repetition period of relevant system info blocks that needs to be received by the UE

to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 67.68 s for higher priority cell search and 7.68 s for lower priority cell search, allow 68 s for higher priority cell and 8 s for lower priority cell in the test case.

A.4.2.4 E-UTRAN FDD – TDD Inter frequency case

A.4.2.4.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-TDD inter-frequency cell reselection requirements specified in clause 4.2.2.4.

The test scenario comprises of 1 E-UTRA FDD cell and 1 E-UTRA TDD cell as given in tables A.4.2.4.1-1 and A.4.2.4.1-2. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Both cell 1 and cell 2 are already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas and cell 2 is of higher priority than cell 1. Furthermore, UE has not registered with network for the tracking area containing cell 2.

Table A.4.2.4.1-1: General test parameters for FDD-TDD inter frequency cell re-selection test case

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell2	UE shall be forced to cell 2 in the initialisation phase, so that reselection to cell 1 occurs during the first T1 phase
T1 end	Active cell		Cell1	UE shall perform reselection to cell 1 during T1
condition	Neighbour cell		Cell2	
Final condition	Active cell		Cell2	UE shall perform reselection to cell 2 during T3
Cell 1 E-U Number	TRA RF Channel		1	One FDD carrier frequency is used. And Cell 1 is on RF channel number 1.
Cell 2 E-U Number	TRA RF Channel		2	One TDD carrier frequencies is used. And Cell 2 is on RF channel number 2.
Time offse	t between cells		3 ms	Asynchronous cells
E-UTRA FDD PRACH configuration			4	As specified in table 5.7.1-2 in TS 36.211
E-UTRA T configurati	UTRA TDD PRACH		53	As specified in table 5.7.1-3 in TS 36.211
	bframe configuration		6	As specified in table 4.2-1 in TS 36.211
	vnlink configuration		1	As specified in table 4.2-2 in TS 36.211
E-UTRA F	DD Access Barring n	-	Not Sent	No additional delays in random access procedure.
E-UTRA T	DD Access Barring n	-	Not Sent	No additional delays in random access procedure.
DRX cycle	elength	S	1.28	The value shall be used for all cells in the test.
T1	•	S	15	T1 need to be defined so that cell re-selection reaction time is taken into account.
T2		S	>7	During T2, cell 2 shall be powered off, and during the off time the physical cell identity shall be changed, The intention is to ensure that cell 2 has not been detected by the UE prior to the start of period T3.
T3		S	75	T3 need to be defined so that cell re-selection reaction time is taken into account.

Table A.4.2.4.1-2: Cell specific test parameters for FDD-TDD inter-frequency cell reselection test case in AWGN

Parameter	Unit	C	ell 1		Cell 2			
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel		1			2			
number								
BW _{channel}	MHz		10			10		
OCNG Patterns defined in								
A.3.2.1.2 (OP.2 FDD) and		OP	.2 FDD		OP.2 TDD			
A.3.2.2.2 (OP.2 TDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB		_			_		
PHICH_RB	dB	0 0						
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
Qrxlevmin	dBm		·140		-140			
$N_{oc}^{ m Note~2}$	dBm/15 kHz				-98			
RSRP Note 3	dBm/15 KHz	-84	-84	-84	-102	-infinity	-86	
\hat{E}_s/I_{ot}	dB	14	14	14	-4	-infinity	12	
\hat{E}_s/N_{oc}	dB	14 14 14			-4	-infinity	12	
Treselection _{EUTRAN}	S	0			0			
Snonintrasearch	dB	50				Not sent		
Thresh _{x, high}	dB	48				48		
Thresh _{serving, low}	dB		44		44			
Thresh _{x, low}	dB		50		50			
Propagation Condition				<u> </u>	AWGN			

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.4.2.4.2 Test Requirements

The cell reselection delay to higher priority is defined as the time from the beginning of time period T3, to the moment when the UE camps on cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on cell 2.

The cell re-selection delay to higher priority shall be less than 68 s.

The cell reselection delay to lower priority is defined as the time from the beginning of time period T1, to the moment when the UE camps on cell 1, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on cell 1.

The cell re-selection delay to lower priority shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to higher priority cell can be expressed as: $T_{higher_priority_search} + T_{evaluate,E-}$ $UTRAN_inter + T_{SI-EUTRA}$, and to lower priority cell can be expressed as: $T_{evaluate,E-UTRAN_inter} + T_{SI-EUTRA}$,

Where:

 $T_{higher_priority_search}$ See clause 4.2.2

T_{evaluate,E-UTRAN_inter} See Table 4.2.2.4-1 in clause 4.2.2.4

T_{SI-EUTRA} Maximum repetition period of relevant system info blocks that needs to be received by the UE

to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 67.68 s for higher priority cell search and 7.68 s for lower priority cell search, allow 68 s for higher priority cell and 8 s for lower priority cell in the test case.

A.4.2.5 E-UTRAN TDD – FDD Inter frequency case

A.4.2.5.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-FDD inter-frequency cell reselection requirements specified in clause 4.2.2.4.

The test scenario comprises of 1 E-UTRA TDD cell and 1 E-UTRA FDD cell as given in tables A.4.2.5.1-1 and A.4.2.5.1-2. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Both cell 1 and cell 2 are already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas and cell 2 is of higher priority than cell 1. Furthermore, UE has not registered with network for the tracking area containing cell 2.

Table A.4.2.5.1-1: General test parameters for TDD-FDD inter frequency cell re-selection test case

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell2	UE shall be forced to cell 2 in the initialisation phase, so that reselection to cell 1 occurs during
Condition				the first T1 phase
T1 end	Active cell		Cell1	UE shall perform reselection to cell 1 during T1
condition	Neighbour cell		Cell2	
Final condition	Active cell		Cell2	UE shall perform reselection to cell 2 during T3
Cell 1 E-U Number	TRA RF Channel		1	One TDD carrier frequency is used. And Cell 1 is on RF channel number 1.
Cell 2 E-U Number	TRA RF Channel		2	One FDD carrier frequencies is used. And Cell 2 is on RF channel number 2.
Time offse	t between cells		3 ms	Asynchronous cells
E-UTRA T configurati	DD PRACH ion		53	As specified in table 5.7.1-3 in TS 36.211
Special su	bframe configuration		6	As specified in table 4.2-1 in TS 36.211
Uplink-dov	Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211
E-UTRA F configurati	DD PRACH ion		4	As specified in table 5.7.1-2 in TS 36.211
E-UTRA F	DD Access Barring n	-	Not Sent	No additional delays in random access procedure.
E-UTRA T	DD Access Barring n	-	Not Sent	No additional delays in random access procedure.
DRX cycle	elength	S	1.28	The value shall be used for all cells in the test.
T1	-	S	15	T1 need to be defined so that cell re-selection reaction time is taken into account.
T2		S	>7	During T2, cell 2 shall be powered off, and during the off time the physical cell identity shall be changed, The intention is to ensure that cell 2 has not been detected by the UE prior to the start of period T3.
Т3		S	75	T3 need to be defined so that cell re-selection reaction time is taken into account.

Table A.4.2.5.1-2: Cell specific test parameters for TDD-FDD inter-frequency cell reselection test case in AWGN

Parameter	Unit	(Cell 1			Cell 2		
		T1	T1 T2 T3		T1	T2	T3	
E-UTRA RF Channel		1			2			
number								
BW _{channel}	MHz		10			10		
OCNG Patterns defined in								
A.3.2.1.2 (OP.2 FDD) and		OP	.2 TDD			OP.2 FDD		
A.3.2.2.2 (OP.2 TDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB		_					
PHICH_RB	dB	0 0						
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
Qrxlevmin	dBm		-140		-140			
$N_{oc}^{$	dBm/15 kHz				-98			
RSRP Note 3	dBm/15 KHz	-84	-84	-84	-102	-infinity	-86	
$\mathbf{\hat{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	14	14	14	-4	-infinity	12	
\hat{E}_s/N_{oc}	dB	14 14 14		-4	-infinity	12		
Treselection _{EUTRAN}	S	0 0						
Snonintrasearch	dB	50 Not sen			Not sent	<u> </u>		
Thresh _{x, high}	dB		48			48		
Thresh _{serving, low}	dB		44		44			
Thresh _{x, low}	dB		50		50			
Propagation Condition		AWGN				·		

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.4.2.5.2 Test Requirements

The cell reselection delay to higher priority is defined as the time from the beginning of time period T3, to the moment when the UE camps on cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on cell 2.

The cell re-selection delay to higher priority shall be less than 68 s.

The cell reselection delay to lower priority is defined as the time from the beginning of time period T1, to the moment when the UE camps on cell 1, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on cell 1.

The cell re-selection delay to lower priority shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to higher priority cell can be expressed as: $T_{higher_priority_search} + T_{evaluate,E-}$ $UTRAN_inter + T_{SI-EUTRA}$, and to lower priority cell can be expressed as: $T_{evaluate,E-UTRAN_inter} + T_{SI-EUTRA}$,

Where:

 $T_{higher_priority_search}$ See clause 4.2.2

 $T_{evaluate, E\text{-}UTRAN_inter} \quad \text{See Table 4.2.2.4-1 in clause 4.2.2.4}$

T_{SI-EUTRA} Maximum repetition period of relevant system info blocks that needs to be received by the UE

to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 67.68 s for higher priority cell search and 7.68 s for lower priority cell search, allow 68 s for higher priority cell and 8 s for lower priority cell in the test case.

A.4.2.6 E-UTRAN TDD – TDD: Inter frequency case

A.4.2.6.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-TDD inter-frequency cell reselection requirements specified in clause 4.2.2.4.

The test scenario comprises of 2 E-UTRA TDD cells on 2 different carriers as given in tables A.4.2.6.1-1 and A.4.2.6.1-2. The test consists of three successive time periods, with time duration of T1, T2, and T2 respectively. Both cell 1 and cell 2 are already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas and cell 2 is of higher priority than cell 1. Furthermore, UE has not registered with network for the tracking area containing cell 2.

Table A.4.2.6.1-1: General test parameters for TDD-TDD inter frequency cell reselection test case

	Parameter	Unit	Value	Comment		
Initial condition	Active cell		Cell2	UE shall be forced to cell 2 in the initialisation phase, so that reselection to cell 1 occurs during the first T1 phase		
T1 end	Active cells		Cell1	UE shall perform reselection to cell 1 during T1		
condition	Neighbour cell		Cell2			
Final condition	Active cell		Cell2	UE shall perform reselection to cell 2 during T3		
E-UTRA R	F Channel Number		1, 2	Two TDD carrier frequencies are used.		
Time offset	e offset between cells		3 µs	Synchronous cells		
Access Ba	Access Barring Information		Not Sent	No additional delays in random access		
	-			procedure.		
Special sul	Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211		
Uplink-dow	Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211		
PRACH co	nfiguration index		53	As specified in table 5.7.1-3 in TS 36.211		
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.		
T1	, ,		Γ1		15	T1 need to be defined so that cell re-selection reaction time is taken into account.
T2		S	>7	During T2, cell 2 shall be powered off, and during the off time the physical cell identity shall be changed, The intention is to ensure that cell 2 has not been detected by the UE prior to the start of period T3.		
T3		S	75	T3 need to be defined so that cell re-selection reaction time is taken into account.		

Table A.4.2.6.1-2: Cell specific test parameters for TDD-TDD inter-frequency cell reselection test case in AWGN

Parameter	Unit	(Cell 1			Cell 2				
		T1	T2	T3	T1	T2	T3			
E-UTRA RF Channel		1			2					
number										
BW _{channel}	MHz		10		10					
OCNG Pattern defined in										
A.3.2.2.2 (OP.2 TDD)		OF	2.2 TDD		C	P.2 TDD				
PBCH_RA	dB									
PBCH_RB	dB									
PSS_RA	dB									
SSS_RA	dB									
PCFICH_RB	dB									
PHICH_RA	dB	0			0					
PHICH_RB	dB									
PDCCH_RA	dB									
PDCCH_RB	dB									
PDSCH_RA	dB									
PDSCH_RB	dB									
OCNG_RA ^{Note 1}	dB									
OCNG_RB ^{Note 1}	dB									
Qrxlevmin	dBm		-140		-140					
$N_{oc}^{ m Note~2}$	dBm/15 kHz			-	-98					
RSRP Note 3	dBm/15 KHz	-84	-84	-84	-102	-infinity	-86			
\hat{E}_{s}/I_{ot}	dB	14	14	14	-4	-infinity	12			
\hat{E}_s/N_{oc}	dB	14 14 14			-4	-infinity	12			
Treselection _{EUTRAN}	S		0			0				
Snonintrasearch	dB	50				Not sent				
Thresh _{x, high}	dB				48					
Thresh _{serving, low}	dB		44		44					
Thresh _{x, low}	dB		50			50				
Propagation Condition		AWGN								

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.4.2.6.2 Test Requirements

The cell reselection delay to higher priority is defined as the time from the beginning of time period T3, to the moment when the UE camps on cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on cell 2.

The cell re-selection delay to higher priority shall be less than 68 s.

The cell reselection delay to lower priority is defined as the time from the beginning of time period T1, to the moment when the UE camps on cell 1, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on cell 1.

The cell re-selection delay to lower priority shall be less than 8 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to higher priority cell can be expressed as: $T_{higher_priority_search} + T_{evaluate,E-UTRAN_inter} + T_{SI-EUTRA}$, and to lower priority cell can be expressed as: $T_{evaluate,E-UTRAN_inter} + T_{SI-EUTRA}$,

Where:

 $T_{higher_priority_search}$ See clause 4.2.2

 $T_{evaluate, E\text{-}UTRAN_inter} \quad \text{See Table 4.2.2.4-1 in clause 4.2.2.4}$

T_{SI-EUTRA} Maximum repetition period of relevant system info blocks that needs to be received by the UE

to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 67.68 s for higher priority cell search and 7.68 s for lower priority cell search, allow 68 s for higher priority cell and 8 s for lower priority cell in the test case.

A.4.2.7 E-UTRAN FDD – FDD Inter frequency case in the existence of nonallowed CSG cell

A.4.2.7.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-FDD inter-frequency cell reselection requirements specified in clause 4.2.2.4 when there is the interference from non-allowed CSG cell and the layers have equal priority.

The test scenario comprises of 2 E-UTRA FDD cells on 2 different carriers and 1 non-allowed E-UTRA FDD CSG cell as given in tables A.4.2.7.1-1 and A.4.2.7.1-2. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Cell 1 is already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas and cell 3 is a non-allowed CSG cell. Furthermore, UE has not registered with network for the tracking area containing cell 2.

Table A.4.2.7.1-1: General test parameters for FDD-FDD inter frequency cell re-selection test case with non-allowed CSG cell

	Parameter	Unit	Value	Comment
Initial	Active cell		Cell1	UE shall be forced to cell 1 in the initialisation
condition				phase
Final	Active cell		Cell2	UE shall perform reselection to cell 2 during T2
condition				
E-UTRA R	F Channel Number		1, 2	Two FDD carrier frequencies are used.
Time offset	t between cells		3 ms	Asynchronous cells
PRACH co	nfiguration		4	As specified in table 5.7.1-2 in TS 36.211
Access Ba	Access Barring Information		Not Sent	No additional delays in random access
				procedure.
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1		S	15	T1 need to be defined so that the non-allowed
				CSG cell is identified.
T2		S	40	T2 need to be defined so that cell re-selection
				reaction time is taken into account.
T3	T3		15	T3 need to be defined so that whether cell re-
				selection would not occur is insured.

Table A.4.2.7.1-2: Cell specific test parameters for FDD-FDD inter frequency cell re-selection test case with non-allowed CSG cell

Parameter	Unit		Cell 1			Cell 2			(Non-allov cell)	wed CSG	
		T1 T2 T3			T1	T2	Т3	T1	T2	Т3	
E-UTRA RF Channel Number		1				2			1		
BW _{channel}	MHz		10			10			10		
OCNG Patterns defined in A.3.2.1.2 (OP.2 FDD)		OP.2 FDD			OI	OP.2 FDD			OP.2 FDD		
PBCH_RA	dB										
PBCH_RB	dB										
PSS_RA	dB										
SSS_RA	dB										
PCFICH_RB	dB										
PHICH_RA	dB										
PHICH_RB	dB		•								
PDCCH_RA	dB	0				0		0			
PDCCH_RB	dB										
PDSCH_RA	dB										
PDSCH_RB	dB										
OCNG_RA ^{Note 1}	dB										
OCNG_RB ^{Note 1}	dB										
Qrxlevmin	dBm		-140		-140			-140			
Qqualmin	dB				1	-20					
Note 2	dBm/15 kHz					-98					
RSRP Note 3	dBm/15 kHz	-90	-90	-85	-Infinity	-85	-90	-90	-85	-60	
RSRQ Note 3	dB	-14.1	-17.1	-35.8				-14.1	-12.1	-10.8	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	-0.64	-5.21	-25	-Infinity	13	8	-0.64	4.36	24.8	
\hat{E}_s/N_{oc}	dB	8 8 13			-Infinity	13	8	8	13	38	
Treselection	S		0		0 0			0			
Snonintrasearch	dB		-10		N	Not sent			Not sent		
Propagation Condition			AWGN								

Note 3: RSRP and RSRQ levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.4.2.7.2 Test Requirements

The cell reselection delay to a newly detectable cell is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on Cell 2.

The cell re-selection delay to a newly detectable cell shall be less than $34\ s.$

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

The probability of reselection from Cell 2 to Cell 1 during T3 observed during testing shall be less than 10%.

NOTE: The cell re-selection delay to a newly detectable cell can be expressed as: $T_{\text{detect}, \text{EUTRAN_Inter}} + T_{\text{SI}}$,

Where:

T_{detect,EUTRAN Inter} See Table 4.2.2.4-1 in clause 4.2.2.4

 T_{SI} Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 33.28 s, allow 34 s for the cell re-selection delay to a newly detectable cell in the test case.

A.4.2.8 E-UTRAN TDD – TDD Inter frequency case in the existence of nonallowed CSG cell

A.4.2.8.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-TDD inter-frequency cell reselection requirements specified in clause 4.2.2.4 when there is the interference from non-allowed CSG cell and the layers have equal priority.

The test scenario comprises of 2 E-UTRA TDD cells on 2 different carriers and 1 non-allowed E-UTRA TDD CSG cell as given in tables A.4.2.8.1-1 and A.4.2.8.1-2. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Cell 1 is already identified by the UE prior to the start of the test. Cell 1 and cell 2 belong to different tracking areas and cell 3 is a non-allowed CSG cell. Furthermore, UE has not registered with network for the tracking area containing cell 2.

Table A.4.2.8.1-1: General test parameters for TDD-TDD inter frequency cell re-selection test case with non-allowed CSG cell

	Parameter	Unit	Value	Comment
Initial	Active cell		Cell1	UE shall be forced to cell 1 in the initialisation
condition				phase
Final condition	Active cell		Cell2	UE shall perform reselection to cell 2 during T2
E-UTRA R	F Channel Number		1, 2	Two TDD carrier frequencies are used.
Time offset	t between cells	μs	3	Synchronous cells
Uplink-dow	Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211
Special sub	Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211
PRACH co	PRACH configuration		53	As specified in table 5.7.1-3 in TS 36.211
Access Ba	Access Barring Information		Not Sent	No additional delays in random access procedure.
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1	-	S	15	T1 need to be defined so that the non-allowed CSG cell is identified.
T2		S	40	T2 need to be defined so that cell re-selection reaction time is taken into account.
Т3		S	15	T3 need to be defined so that whether cell reselection would not occur is insured.

Table A.4.2.8.1-2: Cell specific test parameters for TDD-TDD inter frequency cell re-selection test case with non-allowed CSG cell

E-UTRA RF Channel Number BW _{channel}	MHz	T1	T2	ТЗ	T1	T2	Т3	(Non-a T1	Ilowed CS T2	G cell) T3
Number BW _{channel}	MHz	T1		Т3	T1	T2	T3	T1	TO	T2
Number BW _{channel}	MHz		1					• •		13
BW _{channel}	MHz					2			1	
	MHz									
			10			10			10	
OCNG Pattern defined in		(OP.2 TDI)	OP	2 TDD			OP.2 TDD	ı
A.3.2.2.2 (OP.2 TDD)			JI .Z IDL		01	ב וטט			01.2 100	
PBCH_RA	dB									
PBCH_RB	dB									
PSS_RA	dB									
SSS_RA	dB									
PCFICH_RB	dB									
PHICH_RA	dB									
PHICH_RB	dB		0			0			0	
PDCCH_RA	dB									
PDCCH_RB	dB									
PDSCH_RA	dB									
PDSCH_RB	dB									
OCNG_RA ^{Note 1}	dB									
OCNG_RB ^{Note 1}	dB									
Qrxlevmin	dBm		-140		-140			-140		
Qqualmin	dB				-20					
Note 2	dBm/					-98				
	15kHz									
RSRP Note 3	dBm/	-90	-90	-85	-Infinity	-85	-90	-90	-85	-60
	15kHz									
RSRQ Note 3	dB	-14.1	-17.1	-35.8				-14.1	-12.1	-10.8
\hat{E}_s/I_{ot}	dB	-0.64	-5.21	-25	-Infinity	13	8	-0.64	4.36	24.8
\hat{E}_s/N_{oc}	dB	8 8 13		-Infinity	13	8	8	13	38	
Treselection	S		0		0				0	
Snonintrasearch	dB		-10		No	t sent		Not sent		
Propagation Condition						AWGN				

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over

subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and RSRQ levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.4.2.8.2 Test Requirements

The cell reselection delay to a newly detectable cell is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on Cell 2.

The cell re-selection delay to a newly detectable cell shall be less than 34 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

The probability of reselection from Cell 2 to Cell 1 during T3 observed during testing shall be less than 10%.

NOTE: The cell re-selection delay to a newly detectable cell can be expressed as: $T_{\text{detect,EUTRAN_Inter}} + T_{\text{SI}}$,

Where:

T_{detect.EUTRAN Inter} See Table 4.2.2.4-1 in clause 4.2.2.4

T_{SI} Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 33.28 s, allow 34 s for the cell re-selection delay to a newly detectable cell in the test case.

A.4.2.9 E-UTRAN FDD – FDD Intra frequency case for 5MHz bandwidth

A.4.2.9.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.4.2.1.1.

The parameters of this test are the same as defined in Subclause A.4.2.1.1 except that the values of the parameters in the Table A.4.2.9.1-1 will replace the values of the corresponding parameters in A.4.2.1.1-1, and the values of the parameters in the Table A.4.2.9.1-2 will replace the values of the corresponding parameters in A.4.2.1.1-2.

Table A.4.2.9.1-1: General test parameters for FDD intra frequency cell reselection test case for 5MHz bandwidth

Parameter	Unit	Value	Comment				
Channel Bandwidth (BW _{channel}) MHz 5							
Note 1: See Table A.4.2.1.1-1 for the other parameters.							
Note 2: This is according to the	te 2: This is according to the principle defined in section A.3.7.2.						

Table A.4.2.9.1-2: Cell specific test parameters for FDD intra frequency cell reselection test case in AWGN for 5MHz

Unit	Cell 1			Cell 2				
	T1 T2 T3			T1	T2	Т3		
MHz								
	OP.16 FDD OP.16 FDD							
	- '	T1 MHz	T1 T2 MHz 5	T1 T2 T3 MHz 5	T1 T2 T3 T1 MHz 5 5	T1 T2 T3 T1 T2 MHz 5 5 5		

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: See Table A.4.2.1.1-2 for the other parameters.

A.4.2.9.2 Test Requirements

The test requirements defined in section A.4.2.1.2 shall apply to this test case.

A.4.2.10 E-UTRAN FDD – FDD reselection using an increased number of carriers

A.4.2.10.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-FDD inter-frequency cell reselection requirements for increased UE carrier monitoring specified in clause 4.2.2.4.

The test scenario comprises of indicating 8 E-UTRA FDD interfrequency cells on 8 different carriers in the neighbour list of cell 1 as given in tables A.4.2.10.1-1 and A.4.2.10.1-2. Each repetition of the test consists of five successive time periods, with time duration of T0, T1, T2, T3 and T4 respectively. In the initialisation phase and at the start of each repetition of T0, the test equipment provides signals for cell 1 (serving cell), and selects frequencies for cells 2, 3 and 4 which are chosen from the 8 intefrequency layers which are configured in the UE neighbour cell list as described in general and cell specific parameters. The neighbour lists of cells 2, 3 and 4 shall include the frequency of cell 1 in the normal performance group as well as the other frequencies configured to the UE in the test.

Cell 1, 2, 3 and 4 are identified by the UE during time phase T0. Cell 1, cell 2, cell 3 and cell 4 all belong to different tracking areas. Furthermore, UE has not registered with network for the tracking area containing cell 2, 3 or 4. Cells 1, 2, 3 and 4 all have equal absolute priority.

Table A.4.2.10.1-1: General test parameters for FDD-FDD inter frequency cell re-selection test case

Param	eter	Unit	Value	Comment
ТО	Active cell		Cell1	To is repeated on each repetition of the test. In To the test equipment selects frequencies for cell 2, 3, 4 and then time is allowed for the UE to identify the neighbour cells. See cell specific parameters for detailed settings.
T1 start condition	Active cell		Cell 1	
T1 end condition	Active cell		Cell 2	UE shall perform reselection to cell 2 during T1
	Neighbour cell		Cell 1, cell 3, cell 4	
T2 end condition	Active cell		Cell 3	UE shall perform reselection to cell 3 during T2
	Neighbour cell		Cell 1, cell 2, cell 4	
T3 end condition	Active cell		Cell 4	UE shall perform reselection to cell 4 during T3
	Neighbour cell		Cell 1, cell 2, cell 3	
T4 end condition	Active cell		Cell 1	UE shall perform reselection to cell 1 during T4
	Neighbour cell		Cell 2, cell 3, cell 4	
UE configured E-U Channel Number	TRA RF		1, 2,3,4,5,6,7,8,9	Serving cell and eight xDD carrier frequencies are used in the UE neighbour cell list. Frequencies 5,6,7,8 and 9 are indicated to have reduced performance
Test eqipment conf	ga a.c.		Cell 1 uses UTRA RF channel number 1 Cells 2,3,4 are randomly selected to use different frequencies selected from frequencies 2,3,4,5,6,7,8,9	
PRACH configuration	on		4	As specified in table 5.7.1-2 in TS 36.211 [16]
Access Barring Info	ormation	-	Not Sent	No additional delays in random access procedure.
DRX cycle length		S	1.28	The value shall be used for all cells in the test.
ТО		S	(Test equipment frequency selection and configuration time) + 960	To is defined so that the Test equipment selects frequencies and configures the cells, then the UE cell detection time is taken into account.
T1		S	25	T1 need to be defined so that cell reselection reaction time is taken into account.
T2		S	200	T2 need to be defined so that cell re- selection reaction time is taken into account
T3		S	200	T3 need to be defined so that cell reselection reaction time is taken into account.
T4		S	25	T4 need to be defined so that cell re- selection reaction time is taken into account

Table A.4.2.10.1-2: Cell specific test parameters for FDD-FDD inter-frequency cell reselection test case in AWGN

Parameter	Unit			Cell 1					Cell 2				Cel	I 3			Cel	14	
		T0	T1	T2	T3	T4	T0	T1	T2	T3	T4	T0	T1	T2	T3	T4	T0	T1	T2
E-UTRA RF Channel				1			Ran	domly s	selecte	d from 2	2,3,4	Rand	omly se	elected	from	Randomly selected from			
number							such	that ce	_		ormal	5,6,7,	8,9 suc	h that o	cell 3	5,6,7,	8,9 suc	h that c	ell 4
								perfor	mance	group		_	in the r			_	in the r		
													rforman				rforman		
BW _{channel}	MHz		5MHz: $N_{RB} = 25$					lz: N _{RB,}			5MHz: $N_{RB} = 25$			5MHz: N _{RB} = 25					
			$10MHz: N_{RB} = 50$				10MHz: N _{RB} ,= 50			10MHz: N _{RB} = 50			$10MHz: N_{RB} = 50$						
OCNG patterns				FDD (FDD (.16 FDI				.16 FDI		
			OP.2	FDD (1	0MHz)			OP.2 I	FDD (1	0MHz)		OP	.2 FDD	(10MH	łz)	OP	.2 FDD	(10MH	lz)
PBCH_RA	dB			0					0				0				0		
PBCH_RB	dB																		
PSS_RA	dB																		
SSS_RA	dB																		
PCFICH_RB	dB																		
PHICH_RA	dB																		
PHICH_RB	dB																		
PDCCH_RA	dB																		
PDCCH_RB	dB																		
PDSCH_RA	dB																		
PDSCH_RB	dB																		
OCNG_RA ^{Note 1}	dB																		
OCNG_RB ^{Note 1}	dB																		
Qrxlevmin	dBm			-140					-140			-140			-140				
$N_{oc}^{ m Note~2}$	dBm/15			-98					-98			-98			-98				
T v oc	kHz																		
\hat{E}_s/N_{oc}	dB	14	8	8	8	14	8	14	8	8	8	8	8	14	8	8	8	8	8
\hat{E}_{s}/I_{ot}	dB	14	8	8	8	14	8	14	8	8	8	8	8	14	8	8	8	8	8
RSRP Note 3	dBm/15	-84	-90	-90	-90	-84	-90	-84	-90	-90	-90	-90	-90	-84	-90	-90	-90	-90	-90
1.01.11	kHz	•				•								•					
Treselection _{EUTRAN}	S	0					0			0				0					
Snonintrasearch	dB			62					62				62				62		
Propagation Condition				AWGN					AWGN			AWGN		AWGN					
Antenna Configuration			1x2					1x2			1x2				1x2				
Timing offset to Cell 1		-						3ms			3ms				3m	S			
Note 1: OCNC shall be			حالمت ما	fll	بم مالم برا	-41	<u></u>	44	-14	المحائدة						- all OF	DM	ما ما م	

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for to be fulfilled.

Note 3: Es/lot and RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.4.2.10.2 Test Requirements

The cell reselection delay is defined as the time from the beginning of a relevant time period, to the moment when the UE camps on the target cell, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on the target cell.

The reselection delays shall meet the requirements in table A.4.2.10.2-1.

Table A.4.2.10.2-1: Reselection delay requirements

Time phase	Target cell	Requirement for reselection delay (seconds)
T1	Cell 2 (normal performance group)	20.5
T2	Cell 3 (reduced performance group)	193.3
T3	Cell 4 (reduced performance group)	193.3
T4	Cell 1 (normal performance group)	20.5

NOTE: The cell re-selection delay to a normal performance group cell can be expressed as: $K_{carrier,normal} * T_{evaluate,E-UTRAN_Inter}, + T_{SI}$, and to a reduced performance group cell can be expressed as: $6* K_{carrier,reduced} * T_{evaluate,E-UTRAN_Inter}, + T_{SI}$,

This gives a total of 20.48 s for normal performance group reselection and 193.28 s for reduced performance group reselection, allow 20.5 s for normal performance group and 193.3 s for reduced performance group in the test case. At least 90% of reselections to the reduced performance group shall be within the required time, and at least 90% of reselections to the normal performance group shall be within the required time, with a successful reselection counted if it is within the required time regardless of the carrier frequencies involved.

A.4.2.11 E-UTRAN TDD – TDD reselection using an increased number of carriers

A.4.2.11.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-TDD inter-frequency cell reselection requirements for increased UE carrier monitoring specified in clause 4.2.2.4.

The test scenario comprises of indicating 8 E-UTRA TDD interfrequency cells on 8 different carriers in the neighbour list of cell 1 as given in tables A.4.2.11.1-1 and A.4.2.11.1-2. Each repetition of the test consists of five successive time periods, with time duration of T0, T1, T2, T3 and T4 respectively. In the initialisation phase and at the start of each repetition of T0, the test equipment provides signals for cell 1 (serving cell), and selects frequencies for cells 2, 3 and 4 which are chosen from the 8 intefrequency layers which are configured in the UE neighbour cell list as described in general and cell specific parameters. The neighbour lists of cells 2, 3 and 4 shall include the frequency of cell 1 in the normal performance group as well as the other frequencies configured to the UE in the test.

Cell 1, 2, 3 and 4 are identified by the UE during time phase T0. Cell 1, cell 2, cell 3 and cell 4 all belong to different tracking areas. Furthermore, UE has not registered with network for the tracking area containing cell 2, 3 or 4. Cells 1, 2, 3 and 4 all have equal absolute priority.

Table A.4.2.11.1-1: General test parameters for TDD-TDD inter frequency cell re-selection test case

Parai	meter	Unit	Value	Comment
ТО	Active cell		Cell1	To is repeated on each repetition of the test. In To the test equipment selects frequencies for cell 2,3,4 and then time is allowed for the UE to identify the neighbour cells. See cell specific parameters for detailed settings.
T1 start condition	Active cell		Cell 1	
T1 end condition	Active cell		Cell 2	UE shall perform reselection to cell 2 during T1
To 1 122	Neighbour cell		Cell 1, cell 3, cell 4	115 1 11 () 1 () 1 ()
T2 end condition	Active cell		Cell 3	UE shall perform reselection to cell 3 during T2
	Neighbour cell		Cell 1, cell 2, cell 4	
T3 end condition	Active cell		Cell4	UE shall perform reselection to cell 4 during T3
	Neighbour cell		Cell 1, cell 2, cell 3	
T4 end condition	Active cell		Cell1	UE shall perform reselection to cell 1 during T4
	Neighbour cell	1	Cell 2, cell 3, cell 4	
UE configured E-UT Number	RA RF Channel		1, 2,3,4,5,6,7,8,9	Serving cell and eight xDD carrier frequencies are used in the UE neighbour cell list. Frequencies 5,6,7,8 and 9 are indicated to have reduced performance
			RF channel number 1 Cells 2,3,4 are randomly selected to use different frequencies selected from frequencies 2,3,4,5,6,7,8,9	
PRACH configuration	n		4	As specified in table 5.7.1-2 in TS 36.211 [16]
Access Barring Info	rmation	-	Not Sent	No additional delays in random access procedure.
DRX cycle length		S	1.28	The value shall be used for all cells in the test.
ТО		S	(Test equipment frequency selection and configuration time) + 960	To is defined so that the Test equipment selects frequencies and configures the cells, then the UE cell detection time is taken into account.
T1		S	25	T1 need to be defined so that cell reselection reaction time is taken into account.
T2		S	200	T2 need to be defined so that cell re- selection reaction time is taken into account
Т3		S	200	T3 need to be defined so that cell reselection reaction time is taken into account.
Т4		S	25	T4 need to be defined so that cell reselection reaction time is taken into account

Table A.4.2.11.1-2: Cell specific test parameters for TDD-TDD inter-frequency cell reselection test case in AWGN

E-UTRA RF Channel number BW _{channel} OCNG Patterns	MHz	ТО	_	T2 1 Iz: N _{RB} =	Т3	T4			T2	Т3	T4	T0	T1	T2	T3	T4	T0	T1	T2
number BW _{channel}			_	'					ted from										
BW _{channel}			_	łz: N _{RB} =			cell 2 is	Randomly selected from 2,3,4 such that				Randon	nly selecte	ed from 5	5,6,7,8,9	Randomly selected from 5,6,7,8,9			5,6,7,8,9
			_	łz: N _{RB} =			cell 2 is in the normal performance group			formance	group	such th	at cell 3 is	s in the r	educed	such th	nat cell 4 i	is in the r	educed
			_	lz: N _{RB} =								performance group				performa	nce grou	ρ	
OCNG Patterns			10MH	5MHz: N _{RB} = 25			5MHz: N _{RB} ,= 25			$5MHz: N_{RB} = 25$			5MHz: N _{RB} = 25						
OCNG Patterns			10MHz: $N_{RB} = 50$				10MHz: N _{RB,} = 50			10MHz: N _{RB} = 50			10MHz: N _{RB,} = 50						
1			5MHz: OP.10 TDD					z: OP.10				5MHz: OF			5MHz: OP.10 TDD				
			10MH	lz: OP.2	2 TDD		10MHz: OP.2 TDD			10MHz: OP.2 TDD			10MHz: OP.2 TDD						
PBCH_RA	dB	0						0				C)			(0		
PBCH_RB	dB																		
PSS_RA	dB																		
SSS_RA	dB																		
PCFICH_RB	dB																		
PHICH_RA	dB																		
PHICH_RB	dB																		
PDCCH_RA	dB																		
PDCCH_RB	dB																		
PDSCH_RA	dB																		
PDSCH_RB	dB																		
OCNG_RA ^{Note 1}	dB																		
OCNG_RB ^{Note 1}	dB																		
Qrxlevmin	dBm			-140			-140			-140			-140						
N_{oc} Note 2	dBm15			-98					-98			-98			-98				
1 voc	kHz																		
\hat{E}_s/N_{oc}	dB	14	8	8	8	14	8	14	8	8	8	8	8	14	8	8	8	8	8
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	14	8	8	8	14	8	14	8	8	8	8	8	14	8	8	8	8	8
	dBm/15	-84	-90	-90	-90	-84	-90	-84	-90	-90	-90	-90	-90	-84	-90	-90	-90	-90	-90
	kHz																		
Treselection _{EUTRAN}	S			0			0				0			0					
Snonintrasearch	dB			62					62			62				62			
Propagation Condition				AWGN					AWGN			AWGN			AWGN				
Antenna Configuration		1x2			1x2			1x2			1x2								
Timing offset to Cell 1				-		•	_		3ms	_			3n	ns		3ms			

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for to be fulfilled.

Note 3: Es/lot and RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.4.2.11.2 Test Requirements

The cell reselection delay is defined as the time from the beginning of a relevant time period, to the moment when the UE camps on the target cell, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on the target cell.

The reselection delays shall meet the requirements in table A.4.2.11.2-1

Table A.4.2.11.2-1: Reselection delay requirements

Time phase	Target cell	Requirement for reselection delay (seconds)
T1	Cell 2 (normal performance group)	20.5
T2	Cell 3 (reduced performance group)	193.3
T3	Cell 4 (reduced performance group)	193.3
T4	Cell 1 (normal performance group)	20.5

NOTE: The cell re-selection delay to a normal performance group cell can be expressed as: $K_{carrier,normal} * T_{evaluate,E-UTRAN_Inter}, + T_{SI}$, and to a reduced performance group cell can be expressed as: $6* K_{carrier,reduced} * T_{evaluate,E-UTRAN_Inter}, + T_{SI}$,

This gives a total of 20.48 s for normal performance group reselection and 193.28 s for reduced performance group reselection, allow 20.5 s for normal performance group and 193.3 s for reduced performance group in the test case. At least 90% of reselections to the reduced performance group shall be within the required time, and at least 90% of reselections to the normal performance group shall be within the required time, with a successful reselection counted if it is within the required time regardless of the carrier frequencies involved.

A.4.3 E-UTRAN to UTRAN Cell Re-Selection

A.4.3.1 E-UTRAN FDD – UTRAN FDD:

A.4.3.1.1 EUTRA FDD-UTRA FDD cell reselection: UTRA FDD is of higher priority

A.4.3.1.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRA FDD- UTRA FDD inter-RAT cell reselection requirements specified in clause 4.2.2.5 when the UTRA cell is of higher priority.

The test scenario comprises of one E-UTRA FDD and one UTRA FDD cells as given in tables A.4.3.1.1.1-1, A.4.3.1.1.1-2 and A.4.3.1.1.1-3. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. E-UTRA cell 1 is already identified by the UE prior to the start of the test. Cell 2 is of higher priority than cell 1.

Table A.4.3.1.1.1-1: General test parameters for E-UTRA FDD- higher priority UTRA FDD inter RAT cell re-selection test case

	Parameter	Unit	Value	Comment				
Initial condition	Active cell		Cell 1	UE is on cell 1 in the initialisation phase, so that reselection to cell 2 occurs during T2				
T2 end	Active cell		Cell 2	UE shall perform reselection to cell 2 during T2				
condition	Neighbour cell		Cell 1					
T3 end	Active cell		Cell 1	UE shall perform reselection to cell 1 during T3				
condition	Neighbour cell		Cell 2					
E-UTRA P	E-UTRA PRACH configuration		RA PRACH configuration		RA PRACH configuration		4	As specified in table 5.7.1-2 in TS 36.211
E_UTRA A	E_UTRA Access Barring		Not Sent	No additional delays in random access				
Information	Information			procedure.				
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.				
T1		S	>20	During T1, cell 2 shall be powered off, and during the off time the primary scrambling code shall be changed. The intention is to ensure that cell 2 has not been detected by the UE prior to the start of period T2.				
T2		s	85	T2 needs to be defined so that cell re-selection reaction time is taken into account.				
T3	Т3		25	T3 need to be defined so that cell re-selection reaction time is taken into account.				

Table A.4.3.1.1.1-2: Cell specific test parameters for cell 1(E-UTRA)

Parameter	Unit		Cell 1			
		T1	T2	T3		
E-UTRA RF Channel			1			
number						
BW _{channel}	MHz		10			
OCNG Patterns defined in						
A.3.2.1.2 (OP.2 FDD)		(OP.2 FDD)		
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB		_			
PHICH_RB	dB		0			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
Qqualmin for UTRA	dB		-20			
neighbour cell	uБ		-20			
Qrxlevmin for UTRA	dBm		-115			
neighbour cell	dDill		-113			
Qrxlevmin	dBm		-140			
N_{oc}	dBm/15 kHz		-98			
RSRP	dBm/15 KHz	-84	-84	-84		
\hat{E}_{s}/I_{ot}	dB	14	14	14		
\hat{E}_s/N_{oc}	dB	14 14 14				
Treselection _{EUTRAN}	S		0			
Snonintrasearch	dB		50			
Thresh _{x, high} (Note 2)	dB	40				
Propagation Condition		AWGN				

Note 2: This refers to the value of Thresh_{x, high} which is included in E-UTRA system information, and is a threshold for the UTRA target cell

Table A.4.3.1.1.1-3: Cell specific test parameters for cell 2(UTRA)

Unit	Ce	ell 2 (UTR	(A)
	T1	T2	T3
	Channel	2	
dB	-10		
dB	-12		
dB	-12		
dB	-15		
dB	-0.941		
dB	-Infinity	11	-5
dBm/3,84 MHz	-70		
dB	-Infinity	-10.33	-16.19
dBm	-Infinity	-69	-85
	AWGN		
dB	-20		
dBm	-115		
dBm	-140		
dBm	21		
S	0		
dB	62		
dB	0		
dB	36		
dB	50	-	
	dB d	T1 Channel dB -10 dB -12 dB -15 dB -0.941 dB -Infinity dBm/3,84 MHz -70 dB -Infinity dBm -Infinity AWGN AWGN dB -20 dBm -115 dBm -140 dBm 21 s 0 dB 62 dB 0 dB 36 dB 50	T1 T2 Channel 2 dB -10 dB -12 dB -15 dB -0.941 dB -Infinity 11 dBm/3,84 MHz -70 dB -Infinity -10.33 dBm -Infinity -69 AWGN dB -20 dBm -115 dBm -140 dBm 21 s 0 dB 62 dB 0 dB 36

Note 1: his refers to the value of Thresh_{x, low} which is included in UTRA system information, and is a threshold for the E-UTRA target

A.4.3.1.1.2 Test Requirements

The cell reselection delay to higher priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message on cell 2.

The cell re-selection delay to higher priority shall be less than 81 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to higher priority cell can be expressed as: $T_{higher_priority_search} + T_{evaluateUTRA_FDD} + T_{SI_UTRA}$

Where:

T_{higher_priority_search} See clause 4.2.2; 60s is assumed in this test case

T_{evaluateUTRA-FDD} See Table 4.2.2.5.1-1

T_{SI-UTRA} Maximum repetition period of relevant system info blocks that needs to be received by the UE

to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 80.48 s for higher priority cell search, allow 81 s for higher priority cell reselection in the test case.

A.4.3.1.2 EUTRA FDD-UTRA FDD cell reselection: UTRA FDD is of lower priority

A.4.3.1.2.1 Test Purpose and Environment

This test is to verify the requirement for the EUTRA FDD- UTRA FDD inter-RAT cell reselection requirements specified in clause 4.2.2.5.1 when the UTRA cell is of lower priority.

The test scenario comprises of one UTRA FDD and one E-UTRA FDD cells as given in tables A.4.3.1.2.1-1, A.4.3.1.2.1-2 and A.4.3.1.2.1-3. The test consists of two successive time periods, with time duration of T1 and T2

respectively. Both E-UTRA cell 1 and UTRA cell 2 are already identified by the UE prior to the start of the test. Cell 2 is of lower priority than cell 1.

Table A.4.3.1.2.1-1: General test parameters for EUTRA FDD- lower priority UTRA FDD inter RAT cell re-selection test case

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	E-UTRAN cell
T1 end Active cells condition			Cell1	UE shall perform reselection to cell 1 during T1 for subsequent iterations of the test
	Neighbour cell		Cell2	
T2 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T2
condition	Neighbour cell		Cell1	
E-UTRA P	RACH configuration		4	As specified in table 5.7.1-2 in TS 36.211
E_UTRA A Information	TRA Access Barring -		Not Sent	No additional delays in random access procedure.
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1	_	S	85	T1 need to be defined so that cell re-selection reaction time is taken into account.
T2		S	25	T2 need to be defined so that cell re-selection reaction time is taken into account.

Table A.4.3.1.2.1-2: Cell specific test parameters for cell 1 (E-UTRA)

Parameter	Unit		Cell 1				
		T1	T2				
E-UTRA RF Channel			1				
number							
BW _{channel}	MHz		10				
OCNG Patterns defined in							
A.3.2.1.2 (OP.2 FDD)		OP.2 FDD					
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		0				
PDCCH_RA	dB						
PDCCH_RB	dB	1					
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
Qqualmin for UTRA	dB		-20				
neighbour cell	ub		20				
Qrxlevmin for UTRA	dBm		-115				
neighbour cell	_		_				
Qrxlevmin	dBm		-140				
N_{oc}	dBm/15 kHz		-98				
RSRP	dBm/15 KHz	-86	-102				
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	dB	12	-4				
\hat{E}_s/N_{oc}	dB	12	-4				
Treselection _{EUTRAN}	S		0				
Snonintrasearch	dB	N	lot sent				
Thresh _{serving, low}	dB	44					
Thresh _{x, low} (Note 2)	dB	42					
Propagation Condition AWGN							
Note 1. OCNC shall be us	l	aalla aua fu	الممامم مالم بالل				

Note 2: This refers to the value of Threshx, low which is included in E-UTRA system information, and is a threshold for the UTRA target cell

Table A.4.3.1.2.1-3: Cell specific test parameters for cell 2 (UTRA)

Parameter	Unit	Cell 2	(UTRA)				
		T1	T2				
UTRA RF Channel Number		Channel	2				
CPICH_Ec/lor	dB	-10					
PCCPCH_Ec/lor	dB	-12					
SCH_Ec/lor	dB	-12					
PICH_Ec/lor	dB	-15					
OCNS_Ec/lor	dB	-0.941					
\hat{I}_{or}/I_{oc}	dB	13	13				
I_{oc}	dBm/3,84 MHz	-70					
CPICH_Ec/Io	dB	-10.21	-10.21				
CPICH_RSCP	dBm	-67	-67				
Propagation Condition		AWGN					
Qqualmin	dB	-20					
Qrxlevmin	dBm	-115					
QrxlevminEUTRA	dBm	-140					
UE_TXPWR_MAX_RACH	dBm	21					
Treselection	S	0					
Sprioritysearch1	dB	42					
Sprioritysearch2	dB	0					
Thresh _{x, high} (Note 1)	dB	48					
Note 1: This refers to the value of Thresh, the which is included							

Note 1: This refers to the value of Thresh_x, high which is included in UTRA system information, and is a threshold for the E-UTRA target cell

A.4.3.1.2.2 Test Requirements

The cell reselection delay to lower priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message on cell 2.

The cell re-selection delay to lower priority shall be less than 21 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to lower priority cell can be expressed as: $T_{evaluateUTRA_FDD} + T_{SI-UTRA}$

Where:

 $T_{evaluateUTRA-FDD}$ See Table 4.2.2.5.1-1

T_{SI-UTRA} Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 20.48 s for lower priority cell reselection, allow 21 s.

A.4.3.1.3 EUTRA FDD-UTRA FDD cell reselection in fading propagation conditions: UTRA FDD is of lower priority

A.4.3.1.3.1 Test Purpose and Environment

This test is to verify the requirement for the EUTRA FDD- UTRA FDD inter-RAT cell reselection requirements specified in clause 4.2.2.5.1 when the UTRA cell is of lower priority, and to verify the robustness of the UE measurement filtering in a fading environment. The E-UTRA cell is in fading propagation conditions and the UTRA cell is in AWGN propagation conditions.

The test scenario comprises of one UTRA FDD and one E-UTRA FDD cells as given in tables A.4.3.1.3.1-1, A.4.3.1.3.1-2 and A.4.3.1.3.1-3. The test consists of four successive time periods, with time duration of T1 T2, T3 and

T4 respectively. Both E-UTRA cell 1 and UTRA cell 2 are already identified by the UE prior to the start of the test. Cell 2 is of lower priority than cell 1.

Table A.4.3.1.3.1-1: General test parameters for EUTRA FDD- lower priority UTRA FDD inter RAT cell re-selection test case

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	E-UTRAN cell
T1 end condition	Active cells		Cell1	UE shall perform reselection to cell 1 during T1 for subsequent iterations of the test
	Neighbour cell		Cell2	
T3 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T3
condition	Neighbour cell		Cell1	
E-UTRA P	RACH configuration		4	As specified in table 5.7.1-2 in TS 36.211
E_UTRA A Information	Access Barring	-	Not Sent	No additional delays in random access procedure.
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1		S	<85	T1 need to be defined so that cell re-selection reaction time is taken into account. T1 is terminated when the UE starts to send preambles to cell 1
T2		S	64	The start of T2 is defined as the time when the UE starts to send PRACH preambles to cell 1
ТЗ		s	<25	T3 need to be defined so that cell re-selection reaction time is taken into account. T3 is terminated when the UE starts to send preambles to cell 2
T4		S	64	The start of T4 is defined as the time when the UE starts to send PRACH preambles to cell 2

Table A.4.3.1.3.1-2: Cell specific test parameters for cell 1 (E-UTRA)

Parameter	Unit	Cell 1				
		T1	T2	T3	T4	
E-UTRA RF Channel number				1		
BW _{channel}	MHz			10		
Correlation Matrix and Antenna			1:	x2 Low		
Configuration						
OCNG Patterns defined in						
A.3.2.1.2 (OP.2 FDD)			OF	P.2 FDD		
PSS_RA	dB			0		
SSS_RA	dB			0		
PCFICH_RB	dB			0		
PHICH_RA	dB			0		
PHICH_RB	dB			0		
PDCCH_RA	dB			0		
PDCCH_RB	dB			0		
PDSCH_RA	dB			0		
PDSCH_RB	dB			0		
OCNG_RA ^{Note 1}	dB			0		
OCNG_RB ^{Note 1}	dB			0		
Qqualmin for UTRA neighbour	40			20		
cell	dB			-20		
Qrxlevmin for UTRA neighbour	dBm			-115		
cell	ubili			-115		
Qrxlevmin	dBm			-140		
N_{oc}	dBm/15			-104		
	kHz					
RSRP	dBm/15	-82	-82	-107	-107	
	KHz					
\hat{E}_{s}/I_{ot}	dB	22	22	-3	-3	
\hat{E}_s/N_{oc}	dB	22 22 -3 -3				
Treselection _{EUTRAN}	S	0				
Snonintrasearch	dB		N	ot sent	·	
Thresh _{serving, low}	dB			44		
Thresh _{x, low} (Note 2)	dB			42		
Propagation Condition			E	ETU70		

OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. This refers to the value of Thresh_{x, low} which is included in E-UTRA system information, and is a threshold for the UTRA target cell. Note 1:

Note 2:

Table A.4.3.1.3.1-3: Cell specific test parameters for cell 2 (UTRA)

Parameter	Unit	Cell 2 (UTRA)				
		T1	T2	T3	T4	
UTRA RF Channel Number			Cha	annel 2		
CPICH_Ec/lor	dB			-10		
PCCPCH_Ec/lor	dB			-12		
SCH_Ec/lor	dB			-12		
PICH_Ec/lor	dB			-15		
OCNS_Ec/lor	dB		-(0.941		
\hat{I}_{or}/I_{oc}	dB	13	13	13	13	
I_{oc}	dBm/3,84 MHz	-70				
CPICH_Ec/lo	dB	-10.21	-10.21	-10.21	-10.21	
CPICH_RSCP	dBm	-67	-67	-67	-67	
Propagation Condition			Α	WGN		
Qqualmin	dB			-20		
Qrxlevmin	dBm			-115		
QrxlevminEUTRA	dBm			-140		
UE_TXPWR_MAX_RACH	dBm			21		
Treselection	S	0				
Sprioritysearch1	dB	42				
Sprioritysearch2	dB	0				
Thresh _{x, high} (Note 1)	dB	44				
Note 1: This refers to the val	ue of Threshx	high Which	is included	in UTRA sv	stem	

Note 1: This refers to the value of Thresh_{x, high} which is included in UTRA system information, and is a threshold for the E-UTRA target cell

A.4.3.1.3.2 Test Requirements

The probability of reselection from cell 1to cell 2 during T2 observed during testing shall be less than 10%

The probability of reselection from cell 2 to cell 1 during T4 observed during testing shall be less than 10%

The cell reselection delay to lower priority is defined as the time from the beginning of time period T3, to the moment when the UE camps on cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message on cell 2. In order to evaluate reselection delay, the system simulator first needs to verify that the UE is camped on cell 1 at the start of T3

The cell re-selection delay to lower priority shall be less than 21 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to lower priority cell can be expressed as: $T_{evaluateUTRA_FDD} + T_{SI-UTRA}$

Where:

T_{evaluateUTRA-FDD} See Table 4.2.2.5.1-1

 $T_{\text{SI-UTRA}}$ Maximum repetition period of relevant system info blocks that needs to be received by the UE

to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 20.48 s for lower priority cell reselection, allow 21 s.

A.4.3.1.4 EUTRA FDD-UTRA FDD cell reselection: UTRA FDD is of lower priority for 5MHz bandwidth

A.4.3.1.4.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.4.3.1.2.1

The parameters of this test are the same as defined in Subclause A.4.3.1.2.1 except that the values of the parameters in the Table A.4.3.1.4.1-2 will replace the values of the corresponding parameters in A.4.3.1.2.1-2.

This is according to the principle defined in section A.3.7.2.

Table A.4.3.1.4.1-2: Cell specific test parameters for cell 1 (E-UTRA) for 5MHz bandwidth

Parameter	Unit	(Cell 1			
		T1	T2			
BW _{channel}	MHz	5				
OCNG Patterns defined in	ned in OP.16 FDD					
A.3.2.1.16 (OP.16 FDD)						
Note 1: See Table A.4.3.1.2.1-2 for the other parameters.						

A.4.3.1.4.2 Test Requirements

The test requirements defined in section A.4.3.1.2.1 shall apply to this test case.

A.4.3.1.5 Idle mode FDD to UTRA FDD interRAT reselection

A.4.3.1.5.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRA FDD-UTRA FDD inter-RAT cell reselection requirements for increased UE carrier monitoring specified in clause 4.2.2.4.

The test scenario comprises of indicating 8 UTRA FDD interfrequency cells on 6 different carriers in the neighbour list of cell 1 as given in table A.4.3.1.5-1 and cells 2 and 3 as given in table A.4.3.1.5-2. Each repetition of the test consists of five successive time periods, with time duration of T0, T1, T2, T3 and T4 respectively. In the initialisation phase and at the start of each repetition of T0, the test equipment provides signals for cell 1 (serving cell), and selects frequencies for cells 2 and 3 which are chosen from the 6 inter-RAT layers which are configured in the UE neighbour cell list as described in general and cell specific parameters. The neighbour lists of cells 2 and 3 shall include the frequency of cell 1 in the normal performance group as well as the other frequencies configured to the UE in the test.

Cell 1, 2 and 3 are identified by the UE during time period T0. Cell 1, cell 2 and cell 3 all belong to different tracking areas. Furthermore, UE has not registered with network for the tracking area containing cell 2 or 3. Cells 2 and 3 all have lower absolute priority than cell 1.

Table A.4.3.1.5-1: General test parameters for E-UTRAN FDD- UTRAN FDD inter frequency cell reselection test case

Parai	meter	Unit	Value	Comment
Т0	Active cell		Cell 1	To is repeated on each repetition of the test. In To the test equipment selects frequencies for cell 2 and 3, and then time is allowed for the UE to identify the neighbour cells. See cell specific parameters for detailed settings.
T1 start condition	Active cell		Cell 1	
T1 end condition	Active cell		Cell 2	UE shall perform reselection to cell 2 during T1
	Neighbour cell		Cell 1, cell 3	
T2 end condition	Active cell		Cell 1	UE shall perform reselection to cell 1 during T2
	Neighbour cell		Cell 2, cell 3	
T3 end condition	Active cell		Cell 3	UE shall perform reselection to cell 3 during T3
	Neighbour cell		Cell 1, cell 2	
T4 end condition	Active cell		Cell 1	UE shall perform reselection to cell 1 during T4
	Neighbour cell		Cell 2, cell 3	
UE configured E-UTF Number	RA RF Channel		1	Serving cell and six UTRA FDD carrier frequencies are used in the UE neighbour cell list. Frequencies 5,6 and 7 are indicated to have reduced performance
UE configured UTRA Number	RF Channel		2,3,4,5,6,7	
Test eqipment config	uration		Cell 1 uses E- UTRA RF channel number 1	
			Cells 2,3,4 are randomly selected to use different frequencies selected from frequencies 2,3,4,5,6,7	
PRACH configuration	1		4	As specified in table 5.7.1-2 in TS 36.211
Access Barring Inform	mation	-	Not Sent	No additional delays in random access procedure.
DRX cycle length		S	1.28	The value shall be used for all cells in the test.
ТО		s	(test equipment frequency selection and configuration time) + 960	Initialisation time need to be defined so that cell detection time is taken into account.
T1		S	25	T1 need to be defined so that cell reselection reaction time is taken into account.
T2		S	25	T2 need to be defined so that cell reselection reaction time is taken into account
Т3		S	200	T3 need to be defined so that cell reselection reaction time is taken into account.
T4		S	25	T4 need to be defined so that cell re- selection reaction time is taken into account

Table A.4.3.1.5-2: Cell specific test parameters for E-UTRAN FDD- UTRAN FDD inter-RAT cell reselection test case in AWGN cell 1 (E-UTRAN)

Parameter	Unit			Cell 1			
		T0	T1	T2	T3	T4	
E-UTRA RF Channel				1			
number							
BW _{channel}	MHz			lz: N _{RB} :			
				Hz: N _{RB}			
lo	dBm/4.	59.0	64.5	59.0	64.5	59.0	
	5MHz(2 5RB)	6	9	6	9	6	
	JKb)						
	dBm/9	56.0	61.5	56.0	61.5	56.0	
	Mhz	5	8	5	8	5	
	(50RB)						
PDSCH parameters:			OP.16	FDD (5MHz)		
DL Reference			OP.2	FDD (10	OMHz)		
Measurement							
Channel) TDD(5			
T: " : 11			OP.2	TDD (10)MHz)		
Time offset with				0			
respect to cell1 PBCH RA	dB			0			
PBCH RB	dВ			0			
PSS RA	dB						
SSS RA	dB						
PCFICH RB	dB						
PHICH RA	dB						
PHICH RB	dB						
PDCCH RA	dB						
PDCCH RB	dB						
PDSCH RA	dB						
PDSCH RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
Qrxlevmin	dBm			-140			
N _{oc} Note 2	dBm			-98			
RSRP Note 3	dBm	-84	-90	-84	-90	-84	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	14	8	14	8	14	
\hat{E}_s/N_{oc}	dB	14	8	14	8	14	
Treselection _{EUTRAN}	S			0			
Snonintrasearch	dB			62			
Propagation		_		AWGN			
Condition							
Treselection _{EUTRAN} Snonintrasearch Propagation	S	0 62					

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.4.3.1.5-3: Cell specific test parameters for cells 2 and 3 (UTRA)

Davometer	Unit	Cell 2					Cell 3				
Parameter	Unit	T0	T1	T2	T3	T4	T0	T1	T2	T3	T4
UTRA RF Channel Number		Randomly selected from 1, 2, 3 such that cell 2 is in the normal performance group			Randomly selected from 4, 5, 6 such that cell 3 is in the reduced performance group						
CPICH_Ec/lor	dB		•	-10	•				-10	•	
PCCPCH_Ec/lor	dB			-12					-12		
SCH_Ec/lor	dB			-12					-12		
PICH_Ec/lor	dB			-15					-15		
OCNS_Ec/lor	dB			-0.941					0.941		
\hat{I}_{or}/I_{oc}	dB	-11	-5	-11	-11	-11	-11	-11	-11	-5	-11
I_{oc}	dBm/3,84 MHz			-70					-70		
CPICH_Ec/lo	dB	- 10.3 3	- 16.1 9	10.3 3	10.3 3	10.3 3	10.3 3	10.3 3	10.3 3	- 16.1 9	10.3 3
CPICH_RSCP	dBm	-69	-85	-69	-69	-69	-69	-69	-69	-85	-69
Propagation Condition			•	AWGN	•				AWGN		
Qqualmin	dB			-20					-20		
Qrxlevmin	dBm			-115					-115		
QrxlevminEUTRA	dBm			-140					-140		
UE_TXPWR_MAX_RACH	dBm			21					21		
Treselection	S	0					0				
Sprioritysearch1	dB	62			62						
Sprioritysearch2	dB	0			0						
Thresh _{serving, low}	dB			36		36					
Thresh _{x, low} (Note 1)	dB			50					50		

A.4.3.1.5.2 Test Requirements

The cell reselection delay is defined as the time from the beginning of a relevant time period, to the moment when the UE camps on the target cell, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on the target cell.

The reselection delays shall meet the requirements in table A.4.3.1.5.2-1

Table A.4.3.1.5.2-1

Time phase	Target cell	Requirement for reselection delay (seconds)
T0	Cell 1	
T1	Cell 2 (normal performance group)	21
T2	Cell 1 (normal performance group)	8
T3	Cell 3 (reduced performance group)	148
T4	Cell 1 (normal performance group)	8

NOTE: The cell re-selection delay to a normal performance group cell can be expressed as: $(N_{UTRA_carrier,normal}) * T_{evaluateUTRA_FDD} + T_{SI_UTRA}$ and to a reduced performance group cell can be expressed as: $6 * N_{UTRA_carrier,reduced} * T_{evaluateUTRA_FDD} + T_{SI_UTRA}$.

Where:

 $T_{evaluateUTRA-FDD}$ See Table 4.2.2.5.1-1

 $T_{\text{SI-UTRA}}$ Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 20.48 s for normal performance group reselection, allow 21 s, and gives a total of 147.6 s for reduced performance group reselection, allow 148 s for reduced performance group in the test case. For reselections back to cell 1 since only one frequency is configured, the requirement is $T_{\text{evaluate,E-UTRAN_Inter}}$, $+ T_{\text{SI}} = 7.68$ s, allow 8s.

A.4.3.2 E-UTRAN FDD – UTRAN TDD:

A.4.3.2.1 Test Purpose and Environment

A.4.3.2.1.1 Void

A.4.3.2.1.2 1.28Mcps TDD option

This test is to verify the requirement for the E-UTRA FDD to UTRA TDD inter-RAT cell reselection requirements specified in clause 4.2.2.5.2 when the UTRA cell is of lower priority.

This test scenario comprised of 1 E-UTRA FDD serving cell (Cell 1), and 1 UTRA TDD cell (Cell 2) to be re-selected. Test parameters are given in table A.4.3.2.1.2-1, A.4.3.2.1.2-2, and A.4.3.2.1.2-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. Cell 2 is of lower priority than cell 1.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS36.304.

Table A.4.3.2.1.2-1: General test parameters for E-UTRA FDD to UTRA (1.28 Mcps TDD OPTION) Cell Re-selection

Parar	Parameter		Value	Comment
Initial	Active cell		Cell1	E-UTRAN cell
condition				
T1 end	Active cell		Cell1	UE shall perform reselection to cell 1 during T1 for
condition				subsequent iterations of the test
	Neighbour		Cell2	1.28 Mcps TDD OPTION cell
	cell			
T2 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T2
condition	Neighbour		Cell1	E-UTRA FDD cell
	cell			
CP length of ce	ell 1		normal	
E-UTRA PRAC	E-UTRA PRACH		4	As specified in table 5.7.1-2 in TS 36.211
configuration				
Time offset bet	ween cells		3 ms	Asynchronous cells
Access Barring	Information	-	Not	No additional delays in random access procedure.
			sent	
Treselection		S	0	
DRX cycle leng	jth	S	1,28	
HCS	•		Not	
			used	
T1	T1		85	T1 need to be defined so that cell re-selection reaction time
				is taken into account.
T2		S	25	

Table A.4.3.2.1.2-2: Cell specific test parameters for cell re-selection E-UTRA FDD to UTRA TDD test case (cell 1)

Parameter	Unit	Ce	ll 1				
		T1	T2				
E-UTRA RF Channel		1					
Number							
BW _{channel}	MHz	1	0				
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB	0	0				
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note1}	dB						
OCNG_RB ^{Note1}	dB						
Qrxlevmin	dBm/15kHz	-140	-140				
N_{oc}	dBm/15kHz	-(98				
RSRP	dBm/15kHz	-87	-101				
\hat{E}_{s}/I_{ot}	dB	11	-3				
S _{nonintrasearch}	dB	Not sent					
Thresh _{serving, low}	dB	46 (-94dBm)					
Thresh _{x, low} (Note2)	dB	24 (-79dBm)					
Propagation Condition		AW	/GN				
Note 1: OCNG shall be used such that cell is fully allocated and a							

Note2: This refers to the value of Threshx, low which is included in E-UTRA system information, and is a threshold for the UTRA TDD target cell

Table A.4.3.2.1.2-3: Cell specific test parameters for cell re-selection E-UTRA FDD to UTRA TDD test case (cell 2)

Parameter	Unit	Cell 2 (UTRA)				
Timeslot Number		()	DwPTS		
		T1	T2	T1	T2	
UTRA RF Channel			Char	nel 2		
Number (Note1)			Cilai	IIICI Z		
PCCPCH_Ec/lor	dB	-3	-3			
DwPCH_Ec/lor	dB			0	0	
OCNS_Ec/lor	dB	-3	-3			
\hat{I}_{or}/I_{oc}	dB	11	11	11	11	
I_{oc}	dBm/1.28 MHz	-80				
PCCPCH RSCP	dBm	-72	-72	n.a.	n.a.	
Propagation Condition		AWGN				
Qrxlevmin	dBm	-103				
Qoffset1 _{s,n}	dB	C1, C2: 0				
Qhyst1 _s	dB	0				
Thresh _{x, high} (Note2)	dB		46 (-9	4dBm)		

Note1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.

Note2: This refers to the value of Thresh_{x, high} which is included in UTRA system information, and is a threshold for the E-UTRA target cell

A.4.3.2.1.3 Void

A.4.3.2.2 Test Requirements

A.4.3.2.2.1 1.28Mcps TDD option

The cell reselection delay to lower priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2, and starts to send the SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST message on cell 2.

The cell re-selection delay to lower priority shall be less than 21 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to lower priority cell can be expressed as: $T_{evaluateUTRA_TDD} + T_{SI-UTRA}$

Where:

 $T_{evaluateUTRA_TDD}$ 19.2s, See table table 4.2.2.5.2-1

T_{SI-UTRA} Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 20.48 s, allow 21 s for lower priority cell reselection in the test case.

A.4.3.2.2.2.3 Void

A.4.3.2A E-UTRA FDD to UTRA TDD cell re-selection for IncMon

A.4.3.2A.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRA FDD to UTRA TDD inter-RAT cell reselection requirements for increased UE carrier monitoring specified in clause 4.2.2.4. UTRA TDD cells are of lower priority than E-UTRA serving cell.

The test scenario comprises of indicating 7 UTRA TDD inter-RAT cells on 7 different carriers in the neighbour list of cell 1 as given in tables A.4.3.2A.1-1, A.4.3.2A.1-2 and A.4.3.2A.1-3. Each repetition of the test consists of five successive time periods, with time duration of T0, T1, T2, T3, and T4 respectively. In the initialisation phase and at the start of each repetition of T0, the test equipment provides signals for cell 1 (E-UTRA serving cell), and selects frequencies for cells 2 and 3 which are chosen from the 7 inter-RAT layers which are configured in the UE neighbour cell list as described in general and cell specific parameters. The neighbour lists of cells 2 and 3 shall include the frequency of cell 1 in the normal performance group as well as the other UTRA TDD frequencies configured to the UE in the test.

Cell 1, 2 and 3 are identified by the UE during time phase T0. Cell 1, cell 2 and cell 3 belong to different tracking areas. Furthermore, UE has not registered with network for the tracking area containing cell 2 or 3.

Table A.4.3.2A.1-1: General test parameters for E-UTRA FDD to UTRA TDD inter-RAT cell re-selection test case

Parameter		Unit	Value	Comment		
ТО	Active cell		Cell1	To is repeated on each repetition of the test. In To the test equipment selects frequencies for cell 2, 3 and then time is allowed for the UE to identify the neighbour cells. See cell specific parameters for detailed settings.		
T1 start Active cell condition			Cell 1			
T1 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T1		
condition	Neighbour cell		Cell1			
T2 end condition	Active cell		Cell1	UE shall perform reselection to cell 1 during T2		
T3 end condition	Active cell		Cell3	UE shall perform reselection to cell 3 during T3		
	Neighbour cell		Cell1			
T4 end condition	Active cell		Cell1	UE shall perform reselection to cell 1 in T4 so that next repetition of test can start from T0		
UE configured UTRA RF Channel Number			1, 2, 3, 4, 5, 6, 7	Seven UTRA TDD carrier frequencies are used in th UE neighbour cell list. Frequencies 4, 5, 6, and 7 ar indicated to have reduced performance		
Test eqipment configuration			Cell 1, 2, 3	Cell 1 uses E-UTRA RF channel number 1 Cells 2 is randomly selected to use different frequencies selected from UTRA frequencies 1, 2, 3. Cells 3 is randomly selected to use different frequencies selected from UTRA frequencies 4, 5, 6, 7.		
CP length	CP length of cell 1		normal			
PRACH configuration			4	As specified in table 5.7.1-2 in TS 36.211 [16]		
Access Barring Information		-	Not Sent	No additional delays in random access procedure.		
T _{reselection}		S	0			
HCS			Not used			
DRX cycle length		S	1.28	The value shall be used for all cells in the test.		
TO		S	(Test equipment frequency selection and configuration time) + 960	To is defined so that the Test equipment selects frequencies and configures the cells, then the UE cell detection time is taken into account.		
T1		S	60	T1 need to be defined so that cell re-selection reaction time is taken into account.		
T2		S	25	T2 need to be defined so that cell re-selection reaction time is taken into account		
Т3		S	500	T3 need to be defined so that cell re-selection reaction time is taken into account.		
T4	T4		25	T4 need to be defined so that cell re-selection reaction time is taken into account		

Table A.4.3.2A.1-2: E-UTRA Cell specific test parameters for E-UTRA FDD to UTRA TDD inter-RAT cell reselection test case in AWGN

Parameter	Unit	Cell 1						
		T0	T1	T2	Т3	T4		
E-UTRA RF Channel number		1						
BW _{channel}	MHz	5MHz: N _{RB} = 25 10MHz: N _{RB} = 50						
OCNG Patterns		5MHz: OP.16 FDD 10MHz: OP.2 FDD						
PBCH_RA	dB							
PBCH_RB	dB	1						
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB							
PHICH_RB	dB		0					
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA NOTE 1	dB							
OCNG RB NOTE 1	dB							
$N_{oc}^{\overline{NOTE 2}}$	dBm/15kHz	-98						
\hat{E}_s/N_{oc}	dB	11	-3	11	-3	11		
$\hat{E}_{_{s}}/I_{_{ot}}$ NOTE 3	dB	11	-3	11	-3	11		
RSRP NOTE 3	dBm/15kHz	-87	-101	-87	-101	-87		
Q _{rxlevmin}	dBm/15kHz		-140		•			
Snonintrasearch	dB		Not sent					
Thresh NOTE 4	dB	46 (-94dBm)						
Thresh _{x, low} NOTE 4	dB	24 (-79dBm)						
Propagation Condition		AWGN						
Antenna Configuration		1x2						

NOTE 4: This refers to the value of Thresh_{x, low} which is included in E-UTRA system information, and is a threshold for the UTRA TDD target cell.

NOTE 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for to be fulfilled.

NOTE 3: E_s/I_{ot} and RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.4.3.2A.1-3: UTRA TDD Cell specific test parameters for E-UTRA FDD to UTRA TDD inter-RAT cell reselection test case in AWGN

Parameter	Unit		Cell 2 (UTRA TDD)								
Timeslot Number				0					DwPTS		
		T0	T1	T2	T3	T4	T0	T1	T2	T3	T4
UTRA RF Channel Number NOTE 1		Rando	mly sele	cted fron	າ 1, 2, 3 ເ	such that	cell 2 is	in the no	rmal perf	ormance	group
PCCPCH_Ec/lor	dB			-3							
DwPCH_Ec/lor	dB								0		
OCNS_Ec/lor	dB		-3								
I_{oc}	dBm/ 1.28 MHz	-80									
\hat{I}_{or}/I_{oc}	dB	-3	11	-3	-3	-3	-3	11	-3	-3	-3
PCCPCH RSCP	dBm	-86	-72	-86	-86	-86			n.a.		
Propagation Condition						AW	'GN				
Q _{rxlevmin}	dBm					-1	03				
Qoffset1 _{s,n}	dB					C1, (C2: 0				
Qhyst1 _s	dB					()				
Sprioritysearch1	dB					24 (-7	9dBm)				
Sprioritysearch2	dB	0									
Thresh _{x, high}	dB	46 (-94dBm)									
Ssearch _{E-UTRA}	dB					Not	send				
Time offset to cell1	ms					- 3	3				

NOTE 1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.

NOTE 2: This refers to the value of Thresh_{x, high} which is included in UTRA system information, and is a threshold for the E-UTRA target cell

Table A.4.3.2A.1-4:

Parameter	Unit	Cell 3 (UTRA TDD)									
Timeslot Number				0					DwPTS		
		T0	T1	T2	T3	T4	T0	T1	T2	T3	T4
UTRA RF Channel Number NOTE 1		Rand	domly sel	ected fro	m 4, 5, 6		that cell : oup	3 is in the	e reduce	d perform	ance
PCCPCH_Ec/lor	dB			-3							
DwPCH_Ec/lor	dB								0		
OCNS_Ec/lor	dB			-3							
I_{oc}	dBm/ 1.28 MHz	-80									
\hat{I}_{or}/I_{oc}	dB	-3	-3	-3	11	-3	-3	-3	-3	11	-3
PCCPCH RSCP	dBm	-86	-86	-86	-72	-86			n.a.		
Propagation Condition						AW	/GN				
Q _{rxlevmin}	dBm					-1	03				
Qoffset1 _{s,n}	dB					C1, (C2: 0				
Qhyst1 _s	dB					(0				
Sprioritysearch1	dB					24 (-7	9dBm)				
Sprioritysearch2	dB					(0				
Thresh _{x, high} NOTE 2	dB	46 (-94dBm)									
Ssearch _{E-UTRA}	dB	Not send									
Time offset to cell1	ms	3									
Time offset to cell2	μs		•	•		•	3		•		

NOTE 1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.

NOTE 2: This refers to the value of Thresh_{x, high} which is included in UTRA system information, and is a threshold for the E-UTRA target cell

A.4.3.2A.2 Test Requirements

The cell reselection delay is defined as the time from the beginning of a relevant time period, to the moment when the UE camps on the target cell, and starts to send the SYNCH-UL sequence in the UpPTS on cell 2, 3 for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on the target cell.

The reselection delays shall meet the requirements in table A.4.3.2A.2-1

Table A.4.3.2A.2-1: Test requirements for E-UTRA FDD to UTRA TDD inter-RAT cell reselection

Time phase	Target cell	Requirement for reselection delay (seconds)
T1	Cell 2 (normal performance group)	58.9
T3	Cell 3 (reduced performance group)	462.1

The rate of correct cell reselections observed during repeated tests shall be at least 90%, with a successful reselection counted if it is within the required time regardless of the carrier frequencies involved. At least 90% of reselections to the reduced performance group shall be within the required time, and at least 90% of reselections to the normal performance group shall be within the required time.

NOTE: The cell re-selection delay to a normal performance group cell can be expressed as: $N_{UTRA_carrier_TDD,normal} *T_{evaluateUTRA_TDD} + T_{SI_UTRA}$, and to a reduced performance group cell can be expressed as: $6 * N_{UTRA_carrier_TDD,reduced} *T_{evaluateUTRA_TDD} + T_{SI_UTRA}$,

Where:

T_{evaluateUTRA TDD} 19.2s, See Table 4.2.2.5.2-1

T_{SI_UTRA} Maximum repetition period of relevant system info blocks that needs to be received by the UE

to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 3 * 19.2 + 1.28 = 58.88 s for normal performance group reselection and 6 * 4 * 19.2 + 1.28 = 462.08s for reduced performance group reselection, allow 58.9s for normal performance group and 462.1s for reduced performance group in the test case.

Since only one E-UTRA frequency is configured and signal level of UTRA cell is lower than threshold of $S_{prioritysearch}$, the UE shall select back to cell 1 (E-UTRA cell) within $K_{carrier} * T_{evaluateEUTRA} + T_{SI} = 19.2 + 1.28 = 20.48s$.

A.4.3.3 E-UTRAN TDD – UTRAN FDD:

A.4.3.3.1 Test Purpose and Environment

This test is to verify the requirement for the EUTRA TDD- UTRA FDD inter-RAT cell reselection requirements specified in clause 4.2.2.5.1 when the UTRA cell is of lower priority.

The test scenario comprises of one UTRA FDD and one E-UTRA TDD cells as given in tables A.4.3.3.1-1, A.4.3.3.1-2 and A.4.3.3.1-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both E-UTRA cell 1 and UTRA cell 2 are already identified by the UE prior to the start of the test. Cell 2 is of lower priority than cell 1.

Table A.4.3.3.1-1: General test parameters for EUTRA TDD- lower priority UTRA FDD inter RAT cell reselection test case

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	E-UTRAN cell
T1 end condition	Active cells		Cell1	UE shall perform reselection to cell 1 during T1 for subsequent iterations of the test
	Neighbour cell		Cell2	
T2 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T2
condition	Neighbour cell		Cell1	
E-UTRA P	E-UTRA PRACH configuration		53	As specified in table 5.7.1-3 in TS 36.211
Uplink-dow	vnlink configuration of		1	As specified in table 4.2.2 in TS 36.211
Special sul cell 1	bframe configuration of		6	As specified in table 4.2.1 in TS 36.211
E_UTRA A Information	access Barring	-	Not Sent	No additional delays in random access procedure.
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1		S	85	T1 need to be defined so that cell re-selection reaction time is taken into account.
T2	T2		25	T2 need to be defined so that cell re-selection reaction time is taken into account.

Table A.4.3.3.1-2: Cell specific test parameters for cell 1(E-UTRA)

Unit		Cell 1		
	T1	T2		
	1			
MHz		10		
	OI	P.2 TDD		
dB		0		
dB				
dВ		-20		
uВ		20		
dBm		-115		
		-140		
dBm/15 kHz		-98		
dBm/15 KHz	-86	-102		
dB	12	-4		
dB	12 -4			
S	0			
dB	N	lot sent		
dB		44		
dB	42			
AWGN				
	MHz dB	MHz MHz Of dB dB dB dB dB dB dB dB dB d		

NOTE 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

NOTE 2: This refers to the value of Thresh_{x, low} which is included in E-UTRA system information, and is a threshold for the UTRA target cell

Table A.4.3.3.1-3: Cell specific test parameters for cell 2 (UTRA)

Parameter	Unit	Cell 2	(UTRA)	
		T1	T2	
UTRA RF Channel Number		Channel 2		
CPICH_Ec/lor	dB		10	
PCCPCH_Ec/lor	dB	-	12	
SCH_Ec/lor	dB	-	12	
PICH_Ec/lor	dB	-	15	
OCNS_Ec/lor	dB	-0.9	941	
\hat{I}_{or}/I_{oc}	dB	13	13	
I_{oc}	dBm/3,84 MHz	-7	70	
CPICH_Ec/lo	dB	-10.21	-10.21	
CPICH_RSCP	dBm	-67	-67	
Propagation Condition		AW	/GN	
Qqualmin	dB	-2	20	
Qrxlevmin	dBm	-1	15	
QrxlevminEUTRA	dBm	-1	40	
UE_TXPWR_MAX_RACH	dBm	2	!1	
Treselection	S)	
Sprioritysearch1	dB	4	-2	
Sprioritysearch2	dB		0	
Thresh _{x, high} (NOTE 1)	dB	4	-8	
NOTE 1: This refers to the value of Thresh, that which is included				

NOTE 1: This refers to the value of Thresh_{x, high} which is included in UTRA system information, and is a threshold for the E-UTRA target cell

A.4.3.3.2 Test Requirements

The cell reselection delay to lower priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message on cell 2.

The cell re-selection delay to lower priority shall be less than 21 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to lower priority cell can be expressed as: $T_{evaluateUTRA_FDD} + T_{SI-UTRA}$

Where:

T_{evaluateUTRA-FDD} See Table 4.2.2.5.1-1

T_{SI-UTRA} Maximum repetition period of relevant system info blocks that needs to be received by the UE

to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 20.48 s for lower priority cell reselection, allow 21 s.

A.4.3.3A Idle mode TDD to UTRA FDD interRAT reselection

A.4.3.3A.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRA TDD-UTRA FDD inter-RAT cell reselection requirements for increased UE carrier monitoring specified in clause 4.2.2.4.

The test scenario comprises of indicating 8 UTRA FDD interfrequency cells on 6 different carriers in the neighbour list of cell 1 as given in table A.4.3.3A.1-2 and table A.4.3.3A.1-3 and cells 2 and 3 as given in table A.4.3.3A.1-4. Each repetition of the test consists of five successive time periods, with time duration of T0, T1, T2, T3 and T4 respectively. In the initialisation phase and at the start of each repetition of T0, the test equipment provides signals for cell 1 (serving cell), and selects frequencies for cells 2 and 3 which are chosen from the 6 inter-RAT layers which are configured in the

UE neighbour cell list as described in general and cell specific parameters. The neighbour lists of cells 2 and 3 shall include the frequency of cell 1 in the normal performance group as well as the other frequencies configured to the UE in the test.

Cell 1, 2 and 3 4 are identified by the UE during time period T0. Cell 1, cell 2 and cell 3 belong to different tracking areas. Furthermore, UE has not registered with network for the tracking area containing cell 2 or 3. Cells 1, 2 and 3 4 all have lower absolute priority than cell 1.

Table A.4.3.3A.1-1: General test parameters for E-UTRAN TDD- UTRAN FDD inter frequency cell reselection test case

Param	neter	Unit	Value	Comment
ТО	Active cell		Cell 1	To is repeated on each repetition of the test. In To the test equipment selects frequencies for cell 2, 3 and then time is allowed for the UE to identify the neighbour cells. See cell specific parameters for detailed settings.
T1 start condition	Active cell		Cell 1	
T1 end condition	Active cell		Cell 2	UE shall perform reselection to cell 2 during T1
	Neighbour cell		Cell 1, cell 3	
T2 end condition	Active cell		Cell 1	UE shall perform reselection to cell 1 during T2
	Neighbour cell		Cell 2, cell 3	
T3 end condition	Active cell		Cell 3	UE shall perform reselection to cell 3 during T3
	Neighbour cell		Cell 1, cell 2	
T4 end condition	Active cell		Cell 1	UE shall perform reselection to cell 1 during T4
Neighbour cell UE configured E-UTRA RF Channel Number			Cell 2, cell 3 1	Serving cell and six UTRA FDD carrier frequencies are used in the UE neighbour cell list. Frequencies 5,6 and 7 are indicated to have reduced performance
UE configured UTRA RF	Channel Number		2,3,4,5,6,7	performance
Test eqipment configurat	ion		Cell 1 uses E- UTRA RF channel number 1 Cells 2,3,4 are randomly selected to use different frequencies selected from frequencies 2,3,4,5,6,7	
PRACH configuration			4	As specified in table 5.7.1-2 in TS 36.211
Access Barring Information	on	-	Not Sent	No additional delays in random access procedure.
DRX cycle length		S	1.28	The value shall be used for all cells in the test.
T0		S	(test equipment frequency selection and configuration time) + 960	Initialisation time need to be defined so that cell detection time is taken into account.
		S	25	T1 need to be defined so that cell reselection reaction time is taken into account.
T2		S	25	T2 need to be defined so that cell re- selection reaction time is taken into account
Т3		S	200	T3 need to be defined so that cell reselection reaction time is taken into account.
T4		S	25	T4 need to be defined so that cell re- selection reaction time is taken into account

Table A.4.3.3A.1-2: General test parameters for EUTRA TDD- UTRA FDD inter RAT cell re-selection test case

Parameter	Unit	Value	Comment
Uplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211

Table A.4.3.3A.1-3: Cell specific test parameters for E-UTRAN TDD- UTRAN FDD inter-RAT cell reselection test case in AWGN cell 1 (E-UTRAN)

Parameter	Parameter Unit Cell 1								
		T0	T1	T2	T3	T4			
E-UTRA RF Channel number				1					
BW _{channel}	MHz	5MHz: N _{RB} = 25							
		10MHz: N _{RB} = 50							
lo	dBm/4. 5MHz(2 5RB)	59.0 6	64.5 9	59.0 6	64.5 9	59.0 6			
	dBm/9 Mhz (50RB)	56.0 5	61.5 8	56.0 5	61.5 8	56.0 5			
PDSCH parameters:			OP.16	FDD (5MHz)				
DL Reference			OP.2	FDD (10	OMHz)				
Measurement									
Channel) TDD(5 TDD (10					
Time offset with				0	•				
respect to cell1	40								
PBCH RA	dB			0					
PBCH RB	dB								
PSS RA	dB								
SSS RA	dB								
PCFICH RB	dB								
PHICH RA	dB								
PHICH RB	dB								
PDCCH RA	dB								
PDCCH RB	dB								
PDSCH RA	dB								
PDSCH RB OCNG_RA ^{Note 1}	dB								
OCNG_RB ^{Note 1}	dB dB								
				440					
Qrxlevmin	dBm dBm			-140					
N _{oc} Note 2	dBm		-98						
RSRP Note 3	dBm	-84	-90	-90	-90	-84			
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	14	8	8	8	14			
\hat{E}_s/N_{oc}	dB	14	8	8	8	14			
Treselection _{EUTRAN}	S			0					
Snonintrasearch	dB			62					
Propagation				AWGN					
Condition									
Note 1: OCNG shall						and			
a constant total transmitted power spectral density is achieved for all OFDM symbols. Note 2: Interference from other cells and noise sources not specifing the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power.				and					
for to be fu Note 3: RSRP levels	ulfilled. Is have been derived from other parameters for purposes. They are not settable parameters				s for				

Table A.4.3.3A.1-4: Cell specific test parameters for cells 2 and 3 (UTRA)

Parameter	Unit			Cell 2			Cell 3				
Parameter	Unit	T0	T1	T2	T3	T4	T0	T1	T2	T3	T4
UTRA RF Channel Number		Randomly selected from 1, 2, 3 such that cell 2 is in the normal performance group					Randomly selected from 4, 5, 6 such that cell 3 is in the reduced performance group				
CPICH_Ec/lor	dB			-10	•				-10	•	
PCCPCH_Ec/lor	dB			-12					-12		
SCH_Ec/lor	dB			-12					-12		
PICH_Ec/lor	dB			-15					-15		
OCNS_Ec/lor	dB			-0.941					0.941		
\hat{I}_{or}/I_{oc}	dB	-11	-5	-11	-11	-11	-11	-11	-11	-5	-11
I_{oc}	dBm/3,84 MHz			-70					-70		
CPICH_Ec/lo	dB	- 10.3 3	- 16.1 9	- 10.3 3	- 10.3 3	- 10.3 3	- 10.3 3	- 10.3 3	- 10.3 6	- 16.1 9	- 10.3 3
CPICH_RSCP	dBm	-69	-85	-69	-69	-69	-69	-69	-69	-85	-69
Propagation Condition				AWGN					AWGN		
Qqualmin	dB			-20					-20		
Qrxlevmin	dBm			-115					-115		
QrxlevminEUTRA	dBm			-140					-140		
UE_TXPWR_MAX_RACH	dBm	21			21						
Treselection	S	0			0						
Sprioritysearch1	dB	62				62					
Sprioritysearch2	dB	0 0				0					
Thresh _{serving, low}	dB			36			36				
Thresh _{x, low} (Note 1)	dB		50				50				

A.4.3.3A.2 Test Requirements

The cell reselection delay is defined as the time from the beginning of a relevant time period, to the moment when the UE camps on the target cell, and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on the target cell.

The reselection delays shall meet the requirements in table A.4.3.1.5-1

Table A.4.3.3A.2-1

Time phase	Target cell	Requirement for reselection delay (seconds)
T0	Cell 1	
T1	Cell 2 (normal performance group)	21
T2	Cell 1 (normal performance group)	8
T3	Cell 3 (reduced performance group)	148
T4	Cell 1 (normal performance group)	8

NOTE: The cell re-selection delay to a normal performance group cell can be expressed as: $(N_{UTRA_carrier,normal}) * T_{evaluateUTRA_FDD} + T_{SI-UTRA}$ and to a reduced performance group cell can be expressed as: $6 * N_{UTRA_carrier,reduced} * T_{evaluateUTRA_FDD} + T_{SI-UTRA}$.

Where:

 $T_{evaluateUTRA-FDD}$ See Table 4.2.2.5.1-1

T_{SI-UTRA} Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 20.48 s for normal performance group reselection, allow 21 s, and gives a total of 147.6 s for reduced performance group reselection, allow 148 s for reduced performance group in the test case. For reselections back to cell 1 since only one frequency is configured, the requirement is $T_{\text{evaluate,E-UTRAN_Inter}}$, + T_{SI} = 7.68s, allow 8s.

A.4.3.4 E-UTRAN TDD – UTRAN TDD:

A.4.3.4.1 E-UTRA to UTRA TDD cell re-selection: UTRA is of higher priority

A.4.3.4.1.1 Test Purpose and Environment

A.4.3.4.1.1.1 Void

A.4.3.4.1.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the E-UTRA TDD to UTRA TDD inter-RAT cell re-selection requirements specified in clause 4.2.2.5 when the UTRA cell is of higher priority.

This test scenario comprised of 1 E-UTRA TDD serving cell, and 1 UTRA TDD cell to be re-selected. Test parameters are given in table A.4.3.4.1.1.2-1, A.4.3.4.1.1.2-2, and A.4.3.4.1.1.2-3. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. E-UTRA cell 1 is already identified by the UE prior to the start of the test. Cell 2 is of higher priority than cell 1.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS36.304.

Table A.4.3.4.1.1.2-1: General test parameters for E-UTRAN to UTRAN (1.28 Mcps TDD OPTION) Cell Re-selection

Par	ameter	Unit	Value	Comment
Initial condition	Active cell		Cell 1	UE is on cell 1 in the initialisation phase, so that reselection to cell 2 occurs during T2
T2 end	Active cell		Cell 2	UE shall perform reselection to cell 2 during T2
condition	Neighbour cell		Cell 1	
T3 end	Active cell		Cell 1	UE shall perform reselection to cell 1 during T3
condition	Neighbour cell		Cell 2	
Uplink-dow configuration			1	As specified in table 4.2.2 in TS 36.211
Special sub configuration			6	As specified in table 4.2.1 in TS 36.211
	nfiguration of		53	As specified in table 4.7.1-3 in TS 36.211
CP length of	of cell 1		Normal	
Time offset	between cells		3 ms	Asynchronous cells
Access Bar Information		-	Not sent	No additional delays in random access procedure.
T _{reselection}		S	0	
DRX cycle	length	S	1,28	
HCS			Not used	
T1		s	>20	During T1, cell 2 shall be powered off, and during the off time the primary scrambling code shall be changed, The intention is to ensure that cell 2 has not been detected by the UE prior to the start of period T2.
T2 s		S	85	T2 needs to be defined so that cell re-selection reaction time is taken into account.
Т3		S	25	T3 needs to be defined so that cell re-selection reaction time is taken into account.

Table A.4.3.4.1.1.2-2: Cell specific test parameters for cell re-selection E-UTRA TDD to UTRA TDD test case (cell 1)

Unit			
	T1	T2	T3
		1	
MHz		10	
dB	<u>J</u>		
dB			
dB			
dB	1		
dB	1		
dB	1		
dB	0	0	0
dB	7		
dB	7		
dB]		
dB			
dB			
dB	1		
dBm/15kHz	-140	-140	-140
dBm/15kHz		-98	
dBm/15kHz	-87	-87	-87
dB	11	11	11
dB		24(-79dBm)
dB		46	
		AWGN	
	MHz dB dB dB dB dB dB dB dB dB d	MHz dB dB dB dB dB dB dB dB dB d	MHz 10 dB 11 dB 12 dB

NOTE 1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

NOTE 2: This refers to the value of Thresh_x, high which is included in E-UTRA system information, and is a threshold for the UTRA target cell

Table A.4.3.4.1.1.2-3: Cell specific test parameters for cell re-selection E-UTRA TDD to UTRA TDD test case (cell 2)

Parameter	Unit			Cell 2 ((UTRA)	ı		
Timeslot Number			0			DwPTS	;	
		T1	T2	T3	T1	T2	T3	
UTRA RF Channel Number (NOTE 1)		Channel 2						
PCCPCH_Ec/lor	dB	-3	-3	-3				
DwPCH_Ec/lor	dB				0	0	0	
OCNS_Ec/lor	dB	-3	-3	-3				
\hat{I}_{or}/I_{oc}	dB	-inf	11	-3	-inf	11	-3	
I_{oc}	dBm/1.28 MHz	-80						
PCCPCH RSCP	dBm	-inf	-72	-86		n.a.		
Propagation Condition				AW	'GN			
Q _{rxlevmin}	dBm			-1	03			
Qoffset1 _{s,n}	dB			C1, (C2: 0			
Qhyst1 _s	dB			()			
S _{nonintrasearch}	dB			Not	sent			
Thresh _{serving, low}	dB			24 (-7	9dBm)			
Thresh _{x, low} (NOTE 2)	dB		•	46 (-9		•	•	

NOTE 1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.

NOTE 2: This refers to the value of Thresh_{x, low} which is included in UTRA system information, and is a threshold for the E-UTRA target cell

A.4.3.4.1.1.3 Void

A.4.3.4.1.2 Test Requirements

A.4.3.4.1.2.1 Void

A.4.3.4.1.2.2 1.28 Mpcs TDD option

The cell reselection delay to higher priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2, and starts to send the SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST message on cell 2.

The cell re-selection delay to higher priority shall be less than 81 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to higher priority cell can be expressed as: $T_{higher_priority_search} + T_{evaluateUTRA_TDD} + T_{SI_UTRA}$,

Where:

 $T_{higher_priority_search}$ 60s, See clause 4.2.2

T_{evaluateUTRA TDD} 19.2s, See Table 4.2.2.5.2-1

T_{SI UTRA} Maximum repetition period of relevant system info blocks that needs to be received by the UE

to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 80.48 s, allow 81 s for higher priority cell reselection in the test case.

A.4.3.4.1.2.3 Void

A.4.3.4.2 E-UTRA to UTRA TDD cell re-selection: UTRA is of lower priority

A.4.3.4.2.1 Test Purpose and Environment

A.4.3.4.2.1.1 Void

A.4.3.4.2.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the E-UTRA TDD to UTRA TDD inter-RAT cell re-selection requirements specified in clause 4.2.2.5 when the UTRA cell is of lower priority.

This test scenario comprised of 1 E-UTRA TDD serving cell (Cell 1), and 1 UTRA TDD cell (Cell 2) to be re-selected. Test parameters are given in table A.4.3.4.2.1.2-1, A.4.3.4.2.1.2-2, and A.4.3.4.2.1.2-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. Cell 2 is of lower priority than cell 1.

The ranking of the cells shall be made according to the cell reselection criteria specified in TS36.304.

Table A.4.3.4.2.1.2-1: General test parameters for E-UTRAN to UTRAN (1.28 Mcps TDD OPTION) Cell Re-selection

Paran	neter	Unit	Value	Comment
Initial condition	Active cell		Cell 1	E-UTRAN cell
T1 end	Active cell		Cell1	UE shall perform reselection to cell 1 during T1 for
condition				subsequent iterations of the test
	Neighbour cell		Cell2	1.28 Mcps TDD OPTION cell
T2 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T2
condition	Neighbour cell		Cell1	E-UTRA TDD cell
Uplink-downlink of cell 1	configuration of		1	As specified in table 4.2.2 in TS 36.211
Special subframe of cell 1	configuration		6	As specified in table 4.2.1 in TS 36.211
PRACH configura	ation of cell 1		53	As specified in table 4.7.1-3 in TS 36.211
CP length of cell	1	Normal		
Time offset between	een cells		3 ms	Asynchronous cells
Access Barring Ir	nformation	-	Not	No additional delays in random access procedure.
			sent	
Treselection		S	0	
DRX cycle length]	S	1,28	
HCS			Not	
			used	
T1		S	85	
T2		S	25	

Table A.4.3.4.2.1.2-2: Cell specific test parameters for cell re-selection E-UTRA TDD to UTRA TDD test case (cell 1)

Parameter	Unit	Се	II 1	
		T1	T2	
E-UTRA RF Channel			1	
Number				
BW _{channel}	MHz	1	0	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	0	0	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB]		
PDSCH_RB	dB			
OCNG_RA ^{Note1}	dB			
OCNG_RB ^{Note1}	dB			
Qrxlevmin	dBm/15kHz	-140	-140	
N_{oc}	dBm/15kHz	-6	98	
RSRP	dBm/15kHz	-87	-101	
\hat{E}_s/I_{ot}	dB	11	-3	
Snonintrasearch	dB	Not	sent	
Thresh _{serving, low}	dB	46 (-9	4dBm)	
Thresh _{x, low} (Note2)	dB	24 (-7	9dBm)	
Propagation Condition			'GN	
	used such that cel			
constant total tr	ansmitted power s	pectral density	is achieved	
for all OFDM sy				
	e value of Thresh _x			
UTRA system in	nformation, and is	a threshold for	the UTRA	

target cell

Table A.4.3.4.2.1.2-3: Cell specific test parameters for cell re-selection E-UTRA TDD to UTRA TDD test case (cell 2)

Parameter	Unit		Cell 2	(UTRA)		
Timeslot Number		()	Dwl	PTS	
		T1	T2	T1	T2	
UTRA RF Channel Number (Note1)		Channel 2				
PCCPCH_Ec/lor	dB	-3	-3			
DwPCH_Ec/lor	dB			0	0	
OCNS_Ec/lor	dB	-3	-3			
\hat{I}_{or}/I_{oc}	dB	11	11	11	11	
I_{oc}	dBm/1.28 MHz	-80				
PCCPCH RSCP	dBm	-72	-72	n.a.	n.a.	
Propagation Condition			AW	'GN		
Qrxlevmin	dBm		-1	03		
Qoffset1 _{s,n}	dB		C1, (C2: 0	•	
Qhyst1 _s	dB		()	•	
Thresh _{x, high} (Note2)	dB			4dBm)	·	

Note1: In the case of multi-frequency cell, the UTRA RF Channel

Number is the primary frequency's channel number.

Note2: This refers to the value of $\mathsf{Thresh}_{\mathsf{x},\,\mathsf{high}}$ which is included in

UTRA system information, and is a threshold for the E-

UTRA target cell

A.4.3.4.2.1.3 Void

A.4.3.4.2.2 Test Requirements

A.4.3.4.2.2.1 Void

A.4.3.4.2.2.2 1.28 Mpcs TDD option

The cell reselection delay to lower priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2, and starts to send the SYNCH-UL sequence in the UpPTS for sending the RRC CONNECTION REQUEST message on cell 2.

The cell re-selection delay to lower priority shall be less than 21 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to lower priority cell can be expressed as: $T_{evaluateUTRA_TDD} + T_{SI_UTRA}$,

Where:

T_{evaluateUTRA_TDD} 19.2s, See Table 4.2.2.5.2-1

 T_{SI_UTRA} Maximum repetition period of relevant system info blocks that needs to be received by the UE

to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 20.48 s, allow 21 s for lower priority cell reselection in the test case.

A.4.3.4.2.2.3 Void

A.4.3.4.3 EUTRA TDD-UTRA TDD cell reselection in fading propagation conditions: UTRA TDD is of lower priority

A.4.3.4.3.1 Test Purpose and Environment

This test is to verify the requirement for the EUTRA TDD- UTRA TDD inter-RAT cell reselection requirements specified in clause 4.2.2.5.2 when the UTRA cell is of lower priority, and to verify the robustness of the UE measurement filtering in a fading environment. The E-UTRA cell is in fading propagation conditions and the UTRA cell is in AWGN propagation conditions.

The test scenario comprises of one UTRA TDD and one E-UTRA TDD cells as given in tables A.4.3.4.3.1-1, A.4.3.4.3.1-2 and A.4.3.4.3.1-3. The test consists of four successive time periods, with time duration of T1 T2, T3 and T4 respectively. Both E-UTRA cell 1 and UTRA cell 2 are already identified by the UE prior to the start of the test. Cell 2 is of lower priority than cell 1.

Table A.4.3.4.3.1-1: General test parameters for EUTRA TDD- lower priority UTRA TDD inter RAT cell re-selection test case

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	E-UTRAN cell
T1 end condition	Active cells		Cell1	UE shall perform reselection to cell 1 during T1 for subsequent iterations of the test
	Neighbour cell		Cell2	
T3 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T3
condition	Neighbour cell		Cell1	
E-UTRA P	RACH configuration		53	As specified in table 5.7.1-3 in TS 36.211
Uplink-dow	Jplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special sul cell 1	Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
	E_UTRA Access Barring		Not Sent	No additional delays in random access
Information	1			procedure.
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1		S	<85	T1 need to be defined so that cell re-selection reaction time is taken into account. T1 is terminated when the UE starts to send preambles to cell 1
T2		S	64	The start of T2 is defined as the time when the UE starts to send PRACH preambles to cell 1
Т3	ТЗ		<25	T3 need to be defined so that cell re-selection reaction time is taken into account. T3 is terminated when the UE starts to send PRACH preambles to cell 2
T4		S	64	The start of T4 is defined as the time when the UE starts to send PRACH preambles to cell 2

Table A.4.3.4.3.1-2: Cell specific test parameters for cell 1 (E-UTRA)

Parameter	Unit		Ce	II 1			
		T1	T2	Т3	T4		
E-UTRA RF Channel				1			
number							
BW _{channel}	MHz		1	0			
Correlation Matrix and			1x2	Low			
Antenna Configuration							
OCNG Patterns defined in			OP.2	TDD			
A.3.2.2.2 (OP.2 TDD)							
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB						
PDCCH_RA	dB		(0			
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
Qrxlevmin for UTRA	dBm		-1	03			
neighbour cell							
Qrxlevmin	dBm		-1	40			
N_{oc}	dBm/15 kHz		-1	04			
RSRP	dBm/15 KHz	-82	-82	-107	-107		
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	22	22	-3	-3		
\hat{E}_s/N_{oc}	dB	22	22 22		-3		
Treselection _{EUTRAN}	S			0			
Snonintrasearch	dB		Not	sent			
Thresh _{serving, low}	dB		4	14			
Thresh _{serving, low} Thresh _{x, low} (Note 2)	dB		2	24			
Propagation Condition			ET	U70	·		

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total

transmitted power spectral density is achieved for all OFDM symbols. This refers to the value of Thresh_{x, low} which is included in E-UTRA system information, and is a threshold for the UTRA target cell. Note 2:

Table A.4.3.4.3.1-3: Cell specific test parameters for cell 2 (UTRA)

Parameter	Unit	Cell 2 (UTRA)							
Timeslot Number			()			Dw	PTS	
		T1 T2 T3 T4 T1 T		T2	T3	T4			
UTRA RF Channel Number (Note1)					Char	nel 2			
PCCPCH_Ec/lor	dB		-:	3					
DwPCH_Ec/lor	dB						(0	
OCNS_Ec/lor	dB		-;	3					
\hat{I}_{or}/I_{oc}	dB	dB 13 13 13 13 13		13	13	13			
I_{oc}	dBm/1.28 MHz	-80							
PCCPCH RSCP	dBm	dBm -70 -70 -70 -70 n.a. n.a. n.a.						n.a.	
Propagation Condition					AW	′GN			
Qrxlevmin	dBm				-1	03			
Qrxlevmin _{EUTRA}	dBm				-1	40			
UE_TXPWR_MAX_RACH	dBm				2	1			
Treselection	S				()			
Thresh _{x, high} (Note2)	dB				4	4			
Note1: In the case of multi-freque channel number. Note2: This refers to the value of threshold for the E-UTRA	Thresh _{x, high} which is i					•		•	

A.4.3.4.3.2 Test Requirements

The probability of reselection from cell 1 to cell 2 during T2 observed during testing shall be less than 10%

The probability of reselection from cell 2 to cell 1 during T4 observed during testing shall be less than 10%

The cell reselection delay to lower priority is defined as the time from the beginning of time period T3, to the moment when the UE camps on cell 2, and starts to send the SYNCH-UL sequene in the UpPTS for sending the RRC CONNECTION REQUEST message on cell 2. In order to evaluate reselection delay, the system simulator first needs to verify that the UE is camped on cell 1 at the start of T3

The cell re-selection delay to lower priority shall be less than 21 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to lower priority cell can be expressed as: TevaluateUTRA TDD + TSI-UTRA

Where:

T_{evaluateUTRA TDD} 19.2s, See Table 4.2.2.5.2-1

T_{SI-UTRA} Maximum repetition period of relevant system info blocks that needs to be received by the UE

to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 20.48 s for lower priority cell reselection, allow 21 s.

A.4.3.4.4 E-UTRA TDD to UTRA TDD cell re-selection for IncMon

A.4.3.4.4.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRA TDD to UTRA TDD inter-RAT cell reselection requirements for increased UE carrier monitoring specified in clause 4.2.2.4. UTRA TDD cells are of lower priority than E-UTRA serving cell.

The test scenario comprises of indicating 7 UTRA TDD inter-RAT cells on 7 different carriers in the neighbour list of cell 1 as given in tables A.4.3.4.4.1-1, A.4.3.4.4.1-2 and A.4.3.4.4.1-3. Each repetition of the test consists of five successive time periods, with time duration of T0, T1, T2, T3, and T4 respectively. In the initialisation phase and at the start of each repetition of T0, the test equipment provides signals for cell 1 (E-UTRA serving cell), and selects frequencies for cells 2 and 3 which are chosen from the 7 inter-RAT layers which are configured in the UE neighbour

cell list as described in general and cell specific parameters. The neighbour lists of cells 2 and 3 shall include the frequency of cell 1 in the normal performance group as well as the other UTRA TDD frequencies configured to the UE in the test.

Cell 1, 2, and 3 are identified by the UE during time phase T0. Cell 1, cell 2, and cell 3 belong to different tracking areas. Furthermore, UE has not registered with network for the tracking area containing cell 2 or 3.

Table A.4.3.4.4.1-1: General test parameters for E-UTRA TDD to UTRA TDD inter-RAT cell re-selection test case

Pa	rameter	Unit	Value	Comment
ТО	Active cell		Cell1	To is repeated on each repetition of the test. In To the test equipment selects frequencies for cell 2, 3 and then time is allowed for the UE to identify the neighbour cells. See cell specific parameters for detailed settings.
T1 start condition	Active cell		Cell 1	
T1 end	Active cell		Cell2	UE shall perform reselection to cell 2 during T1
condition	Neighbour cell		Cell1	
T2 end condition	Active cell		Cell1	UE shall perform reselection to cell 1 during T2
T3 end	Active cell		Cell3	UE shall perform reselection to cell 3 during T3
condition	Neighbour cell		Cell1	
T4 end condition	ion Cell1		Cell1	UE shall perform reselection to cell 1 in T4 so that next repetition of test can start from T0
	UE configured UTRA RF Channel Number		1, 2, 3, 4, 5, 6, 7	Seven UTRA TDD carrier frequencies are used in the UE neighbour cell list. Frequencies 4, 5, 6, and 7 are indicated to have reduced performance
	Test eqipment configuration		Cell 1, 2, 3	Cell 1 uses E-UTRA RF channel number 1 Cells 2 is randomly selected to use different frequencies selected from UTRA frequencies 1, 2, 3. Cells 3 is randomly selected to use different frequencies selected from UTRA frequencies 4, 5, 6, 7.
Uplink-dow configuration	on of cell 1		1	As specified in table 4.2.2 in TS 36.211 [16]
Special sul configuration	on of cell 1		6	As specified in table 4.2.1 in TS 36.211 [16]
CP length			normal	
	nfiguration		53	As specified in table 5.7.1-3 in TS 36.211 [16]
Access Ba Information		ı	Not Sent	No additional delays in random access procedure.
Treselection		S	0	
HCS			Not used	
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
ТО		S	(Test equipment frequency selection and configuration time) + 960	T0 is defined so that the Test equipment selects frequencies and configures the cells, then the UE cell detection time is taken into account.
T1		S	60	T1 need to be defined so that cell re-selection reaction time is taken into account.
T2		S	25	T2 need to be defined so that cell re-selection reaction time is taken into account
Т3		S	500	T3 need to be defined so that cell re-selection reaction time is taken into account.
T4		S	25	T4 need to be defined so that cell re-selection reaction time is taken into account

Table A.4.3.4.4.1-2: E-UTRA Cell specific test parameters for E-UTRA TDD to UTRA TDD inter-RAT cell reselection test case in AWGN

MHz dB dB dB dB dB dB	ТО	10ľ 5MF	T2 1 IHz: N _{RB} = MHz: N _{RB} = Iz: OP.10 IHz: OP.2	= 50 TDD	T4
dB dB dB dB dB		10ľ 5MF	IHz: N _{RB} = MHz: N _{RB} = Iz: OP.10	= 50 TDD	
dB dB dB dB dB		10ľ 5MF	MHz: N _{RB} =	= 50 TDD	
dB dB dB dB		5MH	lz: OP.10	TDD	
dB dB dB dB					
dB dB dB dB		1010	IHZ: OP.2	טטו	
dB dB dB dB					
dB dB dB					
dB dB					
dB					
UD					
dB			0		
dB			U		
dB					
dB					
IBm/15kHz			-98		
dB	11	-3	11	-3	11
dB	11	-3	11	-3	11
IBm/15kHz	-87	-101	-87	-101	-87
IBm/15kHz			-140	.11	
dB			Not sent		
dB		4	6 (-94dBn	<u>)</u>	
dB		2	4 (-79dBm	1)	
			ÀWGN		
			1x2		
both cells are	fully alless				
	dB dB Bm/15kHz Bm/15kHz dB dB dB dB	dB dB dB Bm/15kHz dB 11 dB 11 Bm/15kHz -87 Bm/15kHz dB dB dB dB	dB dB dB Bm/15kHz dB 11 -3 dB 11 -3 Bm/15kHz -87 -101 Bm/15kHz dB dB	dB dB dB Bm/15kHz -98 dB 11 -3 11 dB 11 -3 11 Bm/15kHz -87 -101 -87 Bm/15kHz -140 dB Not sent dB 46 (-94dBm dB 24 (-79dBm AWGN	dB dB dB m/15kHz -98 dB 11 -3 11 -3 dB 11 -3 11 -3 Bm/15kHz -87 -101 -87 -101 Bm/15kHz dB Not sent dB dB 46 (-94dBm) dB 24 (-79dBm) AWGN

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for to be fulfilled.

Note 3: E₃/I_{ot} and RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: This refers to the value of Thresh_{x, low} which is included in E-UTRA system information, and is a threshold for the UTRA TDD target cell.

Table A.4.3.4.4.1-3: UTRA TDD Cell specific test parameters for E-UTRA TDD to UTRA TDD inter-RAT cell reselection test case in AWGN

Parameter	Unit					Cell 2 (U	ITRA TDI	D)			
Timeslot Number				0					DwPTS		
		T0	T1	T2	T3	T4	T0	T1	T2	T3	T4
UTRA RF Channel Number Note1		Rando	omly sele	ected from	m 1, 2, 3	such tha	t cell 2 is	in the no	ormal per	formance	group
PCCPCH_Ec/lor	dB		-3								
DwPCH_Ec/lor	dB								0		
OCNS_Ec/lor	dB			-3							
I_{oc}	dBm/ 1.28 MHz		-80								
\hat{I}_{or}/I_{oc}	dB	-3	11	-3	-3	-3	-3	11	-3	-3	-3
PCCPCH RSCP	dBm	-86	-86 -72 -86 -86 -86 n.a.								
Propagation Condition						AV	VGN				
Q _{rxlevmin}	dBm					-	103				
Qoffset1 _{s,n}	dB					C1,	C2: 0				
Qhyst1 _s	dB						0				
Sprioritysearch1	dB					24 (-	79dBm)				
Sprioritysearch2	dB						0				
Thresh _{x, low} Note2	dB					46 (-9	94dBm)				
Ssearch _{E-UTRA}	dB		•	•		Not	send		•		
Time offset to cell1	ms						3				
Note1: In the case	of multi-frequ	iency ce	II, the UT	RA RF (Channel	Number	is the prir	mary fred	uency's o	channel n	umber.

Note1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.

Note2: This refers to the value of Thresh_{x, low} which is included in UTRA system information, and is a threshold for the E-UTRA target cell

Table A.4.3.4.4.1-4:

Parameter	Unit			•	(Cell 3 (U	TRA TDE	0)	•		
Timeslot Number		0						DwPTS			
		T0	T1	T2	T3	T4	T0	T1	T2	T3	T4
UTRA RF Channel Number Note1		Rand	Randomly selected from 4, 5, 6, 7 such that cell 3 is in the reduced performance group							nance	
PCCPCH_Ec/lor	dB		-3								
DwPCH_Ec/lor	dB								0		
OCNS_Ec/lor	dB		-3								
I_{oc}	dBm/ 1.28 MHz		-80							_	
\hat{I}_{or}/I_{oc}	dB	-3	-3	-3	11	-3	-3	-3	-3	11	-3
PCCPCH RSCP	dBm	-86	-86	-86	-72	-86			n.a.		
Propagation Condition						AW	'GN				
Q _{rxlevmin}	dBm					-1	03				
Qoffset1 _{s,n}	dB					C1, (C2: 0				
Qhyst1 _s	dB)				
Sprioritysearch1	dB					24 (-7	9dBm)				
Sprioritysearch2	dB					()				
Thresh _{x, high} Note2	dB					46 (-9	4dBm)				
Ssearch _{E-UTRA}	dB					Not	send				
Time offset to cell1	ms					;	3				
Time offset to cell2	μs					;	3				
	of multi-frequence										

Note1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.

Note2: This refers to the value of Thresh_{x, high} which is included in UTRA system information, and is a threshold for the E-UTRA target cell

A.4.3.4.4.2 Test Requirements

The cell reselection delay is defined as the time from the beginning of a relevant time period, to the moment when the UE camps on the target cell, and starts to send the SYNCH-UL sequence in the UpPTS on cell 2, 3 for sending the RRC CONNECTION REQUEST message to perform a Tracking Area Update procedure on the target cell.

The reselection delays shall meet the requirements in table A.4.3.4.4.2-1

Table A.4.3.4.4.2-1: Test requirements for E-UTRA TDD to UTRA TDD inter-RAT cell reselection

Time phase	Target cell	Requirement for reselection delay (seconds)
T1	Cell 2 (normal performance group)	58.9
T3	Cell 3 (reduced performance group)	462.1

The rate of correct cell reselections observed during repeated tests shall be at least 90%, with a successful reselection counted if it is within the required time regardless of the carrier frequencies involved. At least 90% of reselections to the reduced performance group shall be within the required time, and at least 90% of reselections to the normal performance group shall be within the required time.

NOTE: The cell re-selection delay to a normal performance group cell can be expressed as: $N_{UTRA_carrier_TDD,normal} *T_{evaluateUTRA_TDD} + T_{SI_UTRA}$, and to a reduced performance group cell can be expressed as: $6 * N_{UTRA_carrier_TDD,reduced} *T_{evaluateUTRA_TDD} + T_{SI_UTRA}$,

Where:

T_{evaluateUTRA TDD} 19.2s, See Table 4.2.2.5.2-1

T_{SI_UTRA} Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case.

This gives a total of 3 * 19.2 + 1.28 = 58.88 s for normal performance group reselection and 6 * 4 * 19.2 + 1.28 =

462.08s for reduced performance group reselection, allow 58.9s for normal performance group and 462.1s for reduced performance group in the test case.

Since only one E-UTRA frequency is configured and signal level of UTRA cell is lower than threshold of $S_{prioritysearch}$, the UE shall select back to cell 1 (E-UTRA cell) within $K_{carrier} * T_{evaluateEUTRA} + T_{SI} = 19.2 + 1.28 = 20.48s$.

A.4.4 E-UTRAN to GSM Cell Re-Selection

A.4.4.1 E-UTRAN FDD – GSM:

A.4.4.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to GSM cell re-selection delay reported in clause 4.2.2.5.

This scenario implies the presence of 1 E-UTRAN serving cell, and 1 GSM cell to be re-selected. The UE is requested to monitor neighbouring cells on 1 E-UTRA carrier and 12 GSM cells. Test parameters are given in Table, A.4.4.1-1, A.4.4.1-2, A.4.4.1-3. E-UTRA FDD cell (Cell 1) and GSM cell (cell 2) shall belong to different Location Areas. The test comprises two successive time periods, T1 and T2. During initialization before the start of the test, the UE is camped on cell 1. By the end of T1, the UE has identified BSIC on the GSM BCCH carrier of cell 2 but the signal levels do not meet the reselection criterion during T1. At the start of T2, the signal levels change such that cell 2 satisfies reselection criterion. The GSM layer is configured at a lower priority than the serving E-UTRA FDD layer.

Table A.4.4.1-1: General test parameters for E-UTRA FDD GSM cell re-selection test case

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell1	UE shall be forced to cell 1 in the initialisation phase and shall be able to detect and monitor the 4 strongest GSM BCCH carriers in T1 . Cell 1 is an E-UTRA FDD cell.
Final condition	Neighbour cell		Cell2	UE shall perform reselection to cell 2 during T2. Cell 2 is a GSM cell.
E-UTRA R	F Channel Number		1	1 E-UTRA FDD carrier frequency
GSM ARF	CN		1	12 GSM BCCH carriers are used
PRACH co	nfiguration		4	As specified in table 5.7.1-2 in TS 36.211
Access Barring Information		-	Not Sent	No additional delays in random access procedure.
CP length	of cell 1		Normal	
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1	-	S	35	T1 need to be defined so that cell re-selection reaction time is taken into account.
T2		S	35	T2 need to be defined so that the higher layer search periodicity and cell re-selection reaction time are taken into account.
Propagatio	n channel		AWGN	

Table A.4.4.1-2: Cell-specific test parameters for Cell 1 – E-UTRA FDD cell

	1	Cell 1
	T1	T2
		1
MHz		10
	IO	P.2 FDD
dB		
dB		0
dB		
dBm		-140
dBm/15 kHz		-98
dBm/15 KHz	-89	-102
dB	9	-4
dB	9	-4
S		0
dB	Not sent	
dB	44	
dB	24	
	dB d	MHz OF dB dB dB dB dB dB dB dB dB d

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: This refers to Thresh_{x, low} which is included in E-UTRA system information, and is a threshold for GSM target cell.

Table A.4.4.1-3: Cell-specific test parameters for Cell 2 - GSM cell

Doromotor	Unit	Cell 2 (GSM)		
Parameter	Unit	T1	T2	
Absolute RF Channel Number		ARFO	CN 1	
RXLEV	dBm	-90	-75	
RXLEV_ACCESS_MIN	dBm	-10)5	
MS_TXPWR_MAX_CCH	dBm	24	4	

A.4.4.1.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RR Channel Request message for location update to Cell 2.

The cell re-selection delay shall be less than $26 \text{ s} + T_{BCCH}$, where T_{BCCH} is the maximum time allowed to read BCCH data from GSM cell [8].

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as: $4*T_{measureGSM} + T_{BCCH}$, where:

 $T_{measureGSM}$ See Table 4.2.2.5.3-1 in clause 4.2.2.5.3.

T_{BCCH} Maximum time allowed to read BCCH data from GSM cell [8].

According to [8], the maximum time allowed to read the BCCH data, when being synchronized to

a BCCH carrier, is 1.9 s.

This gives a total of 25.6 s + T_{BCCH} , allow 26 s + T_{BCCH} in the test case.

A.4.4.2 E-UTRAN TDD – GSM:

A.4.4.2.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN TDD to GSM cell re-selection delay reported in clause 4.2.2.5.

This scenario implies the presence of 1 E-UTRAN serving cell, and 1 GSM cell to be re-selected. The UE is requested to monitor neighbouring cells on 1 E-UTRA carrier and 12 GSM cells. Test parameters are given in Table, A.4.4.2-1, A.4.4.2-2, A.4.4.2-3. E-UTRA TDD cell (Cell 1) and GSM cell (cell 2) shall belong to different Location Areas. The test comprises two successive time periods, T1 and T2. During initialization before the start of the test, the UE is camped on cell 1. By the end of T1, the UE has identified BSIC on the GSM BCCH carrier of cell 2 but the signal levels do not meet the reselection criterion during T1. At the start of T2, the signal levels change such that cell 2 satisfies reselection criterion. The GSM layer is configured at a lower priority than the serving E-UTRA TDD layer.

Table A.4.4.2-1: General test parameters for E-UTRA TDD GSM cell re-selection test case

	Parameter	Unit	Value	Comment
Initial	Active cell		Cell1	UE shall be forced to cell 1 in the initialisation
condition				phase and shall be able to detect and monitor
				the 4 strongest GSM BCCH carriers in T1. Cell 1
				is an E-UTRA TDD cell.
Final	Neighbour cell		Cell2	UE shall perform reselection to cell 2 during T2.
condition				Cell 2 is a GSM cell.
E-UTRA R	F Channel Number		1	1 E-UTRA TDD carrier frequency
GSM ARFO	CN		1	12 GSM BCCH carriers are used
Uplink-dow	nlink configuration of		1	As specified in table 4.2.2 in TS 36.211
cell 1	-			
Special sub	oframe configuration		6	As specified in table 4.2.1 in TS 36.211
for cell 1	-			
PRACH co	nfiguration for cell 1		53	As specified in table 5.7.1-3 in TS 36.211
CP length	of cell 1		Normal	
Access Barring Information		-	Not Sent	No additional delays in random access
				procedure.
DRX cycle	length	S	1.28	The value shall be used for all cells in the test.
T1		S	35	T1 need to be defined so that cell re-selection
				reaction time is taken into account.
T2		S	35	T2 need to be defined so that the higher layer
				search periodicity and cell re-selection reaction
				time are taken into account.
Propagatio	n channel		AWGN	

Table A.4.4.2-2: Cell-specific test parameters for Cell 1 – E-UTRA TDD cell

Parameter	Unit	Cell 1	
		T1	T2
E-UTRA RF Channel			1
number			
BW _{channel}	MHz		10
OCNG Patterns defined in			
A.3.2.2.2 (OP.2 TDD)		OI	P.2 TDD
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB		0
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA ^{Note 1}	dB		
OCNG_RB ^{Note 1}	dB		
Qrxlevmin	dBm		-140
N_{oc}	dBm/15 kHz		-98
RSRP	dBm/15 KHz	-89	-102
\hat{E}_{s}/I_{ot}	dB	9 -4	
\hat{E}_s/N_{oc}	dB	9	-4
TreselectionEUTRAN	S		0
Snonintrasearch	dB	N	lot sent
Thresh _{serving, low}	dB	44	
Thresh _{x, low} (Note 2)	dB		24

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved

for all OFDM symbols.

Note 2: This refers to Thresh_{x, low} which is included in E-UTRA system

information, and is a threshold for GSM target cell.

Table A.4.4.2-3: Cell-specific test parameters for Cell 2 - GSM cell

Doromotor	Unit	Cell 2 (GSM)		
Parameter	Unit	T1	T2	
Absolute RF Channel Number		ARFCN 1	I	
RXLEV	dBm	-90	-75	
RXLEV_ACCESS_MIN	dBm	-105		
MS_TXPWR_MAX_CCH	dBm	24	•	

A.4.4.2.2 Test Requirements

The cell re-selection delay is defined as the time from the beginning of time period T2, to the moment when the UE camps on Cell 2, and starts to send the RR Channel Request message for location update to Cell 2.

The cell re-selection delay shall be less than $26 \text{ s} + T_{BCCH}$, where T_{BCCH} is the maximum time allowed to read BCCH data from GSM cell [8].

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay can be expressed as: $4*T_{measureGSM} + T_{BCCH}$, where:

 $T_{measureGSM}$ See Table 4.2.2.5.3-1 in clause 4.2.2.5.3.

T_{BCCH} Maximum time allowed to read BCCH data from GSM cell [8].

According to [8], the maximum time allowed to read the BCCH data, when being synchronized to

a BCCH carrier, is 1.9 s.

This gives a total of 25.6 s + T_{BCCH} , allow 26 s + T_{BCCH} in the test case.

A.4.5 E-UTRAN to HRPD Cell Re-Selection

A.4.5.1 E-UTRAN FDD – HRPD

A.4.5.1.1 E-UTRAN FDD – HRPD Cell Reselection: HRPD is of Lower Priority

A.4.5.1.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD- HRPD inter-RAT cell reselection requirements specified in clause 4.2.2.5.4 when the HRPD cell is of lower priority.

The test scenario comprises of one HRPD and one E-UTRAN FDD cells as given in tables A.4.5.1.1.1-1, A.4.5.1.1.1-2 and A.4.5.1.1.1-3.

The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both E-UTRAN FDD cell 1 and HRPD cell 2 are already identified by the UE prior to the start of the test. At T1 the UE is camped on to cell 1. Cell 2 is of lower priority than cell 1. Cell 1 and cell 2 shall belong to different tracking areas.

Table A.4.5.1.1.1-1: General Test Parameters for E-UTRAN FDD - lower priority HRPD Cell Reselection

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell 1	E-UTRAN FDD cell
	Neighbour cell		Cell 2	HRPD cell
Final condition	Active cell		Cell 2	HRPD cell is selecting during T2
DRX cycle length		S	1.28	
E-UTRA FDD RF	Channel Number		1	Only one FDD carrier frequency is used.
E-UTRA FDD Cha	nnel Bandwidth (BW _{channel})	MHz	10	
HRPD RF Channel Number			1	Only one HRPD carrier
				frequency is used.
E-UTRA FDD PRACH configuration			4	As specified in table 5.7.1-2 in TS 36.211
E_UTRA FDD Access Barring Information		-	Not Sent	No additional delays in random
				access procedure.
T1		S	30	
T2		s	30	

Table A.4.5.1.1.1-2: Cell Specific Test Parameters for E-UTRAN FDD (Cell # 1)

Parameter Unit Cell 1		l 1	
		T1	T2
E-UTRA RF Channel number		1	
BW _{channel}	MHz	1(0
OCNG Patterns defined in A.3.2.1.2			
(OP.2 FDD)		OP.2	FDD
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB	_	
PHICH_RB	dB	0	
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA ^{Note 1}	dB		
OCNG_RB ^{Note 1}	dB		
N_{oc}	dBm/15 kHz	-9	8
RSRP	dBm/15 KHz	-89	-102
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	9	-4
\hat{E}_s/N_{oc}	dB	9	-4
Treselection _{EUTRAN}	S	C	
Snonintrasearch	dB	Not sent	
cellReselectionPriority	-	1	
Qrxlevmin	dBm	-14	10
Qrxlevminoffset	dB	0	
Pcompensation	dB	0	
SservingCell	dB	51	38
Thresh _{serving, low}	dB	44	4
Propagation Condition		AW	GN

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Parameter Unit Cell 2 <u>T1</u> T2 HRPD RF Channel Number Control E_b (38.4 kbps) dB 21 Control E_b (76.8 kbps) dB 18 N, \hat{I}_{or}/I_{oc} dB 0 0 dBm/ 1.2288 -55 MHz CDMA2000 HRPD Pilot Strength dΒ -3 -3 **Propagation Condition AWGN** SnonServingCell,x -6 Treselection 0 s hrpd-CellReselectionPriority 0 Thresh_{x, low} -14

Table A.4.5.1.1.1-3: Cell Specific Test Parameters for HRPD (cell # 2)

A.4.5.1.1.2 Test Requirements

The cell reselection delay to lower priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2 and starts to send access probe preambles on the Access Channel on cell 2.

The cell re-selection delay to the lower priority cell 2 shall be less than 21 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to lower priority cell can be expressed as: T_{evaluateHRPD} + T_{SI-HRPD}

Where:

T_{evaluatHRPD} See Table 4.2.2.5.4-1

T_{SI-HRPD} Maximum repetition period of relevant system information blocks that need to be received by

the UE to camp on cell 2; 1704 ms is assumed in this test case.

This gives a total of 20.904 s for the lower priority cell reselection, allow 21 s in the test case.

A.4.5.2 E-UTRAN TDD – HRPD

A.4.5.2.1 E-UTRAN TDD – HRPD Cell Reselection: HRPD is of Lower Priority

A.4.5.2.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN TDD- HRPD inter-RAT cell reselection requirements specified in clause 4.2.2.5.4 when the HRPD cell is of lower priority.

The test scenario comprises of one HRPD and one E-UTRAN TDD cells as given in tables A.4.5.2.1.1-1, A.4.5.2.1.1-2 and A.4.5.2.1.1-3.

The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both E-UTRAN TDD cell 1 and HRPD cell 2 are already identified by the UE prior to the start of the test. At T1 the UE is camped on to cell 1. Cell 2 is of lower priority than cell 1. Cell 1 and cell 2 shall belong to different tracking areas.

Table A.4.5.2.1.1-1: General Test Parameters for E-UTRAN TDD - lower priority HRPD Cell Reselection

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell 1	E-UTRAN TDD cell
	Neighbour cell		Cell 2	HRPD cell
Final condition	Active cell		Cell 2	HRPD cell is selecting during T2
Uplink-downlink co	onfiguration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe	configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
CP length of cell 1			Normal	
DRX cycle length		S	1.28	
E-UTRA TDD RF	Channel Number		1	Only one TDD carrier frequency is used.
E-UTRA TDD Cha	E-UTRA TDD Channel Bandwidth (BWchannel)		10	
HRPD RF Channe	el Number		1	Only one HRPD carrier frequency is used.
E-UTRA TDD PRACH configuration of cell 1			53	As specified in table 4.7.1-3 in TS 36.211
E_UTRA TDD Access Barring Information		-	Not Sent	No additional delays in random access procedure.
T1	·	S	30	
T2		S	30	

Table A.4.5.2.1.1-2: Cell Specific Test Parameters for E-UTRAN TDD (Cell # 1)

Parameter	Unit	Ce	II 1
		T1	T2
E-UTRA RF Channel number		1	
BW _{channel}	MHz	1	0
OCNG Patterns defined in A.3.2.2.2			
(OP.2 TDD)		OP.2	TDD
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB	()
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA ^{Note 1}	dB		
OCNG_RB ^{Note 1}	dB		
N_{oc}	dBm/15 kHz	-g	98
RSRP	dBm/15 KHz	-89	-102
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	9	-4
\hat{E}_s/N_{oc}	dB	9	-4
Treselection _{EUTRAN}	S	()
Snonintrasearch	dB	Not	sent
cellReselectionPriority	-	1	
Qrxlevmin	dBm	-14	40
Qrxlevminoffset	dB	()
Pcompensation	dB	()
S _{Serving} Cell	dB	51	38
Thresh _{serving, low}	dB	4	4
Propagation Condition		AW	GN
Note 1: OCNG shall be used such th	at hoth cells are fu	illy allocated and a const	ant total transmitted

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Parameter Unit Cell 2 T1 T2 HRPD RF Channel Number Control E_b (38.4 kbps) dB 21 Control E_b (76.8 kbps) dB 18 N, \hat{I}_{or}/I_{oc} dB 0 0 dBm/ 1.2288 -55 MHz CDMA2000 HRPD Pilot Strength dΒ -3 -3 **Propagation Condition AWGN** SnonServingCell,x -6 Treselection 0 s hrpd-CellReselectionPriority 0 Thresh_{x, low} -14

Table A.4.5.2.1.1-3: Cell Specific Test Parameters for HRPD (cell # 2)

A.4.5.2.1.2 Test Requirements

The cell reselection delay to lower priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2 and starts to send access probe preambles on the Access Channel on cell 2.

The cell re-selection delay to the lower priority cell 2 shall be less than 21 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to lower priority cell can be expressed as: $T_{evaluateHRPD} + T_{SI-HRPD}$

Where:

T_{evaluatHRPD} See Table 4.2.2.5.4-1

 $T_{\text{SI-HRPD}}$ Maximum repetition period of relevant system information blocks that need to be received by the UE to camp on cell 2; 1704 ms is assumed in this test case.

This gives a total of 20.904 s for the lower priority cell reselection, allow 21 s in the test case.

A.4.6 E-UTRAN to cdma2000 1X Cell Re-Selection

A.4.6.1 E-UTRAN FDD – cdma2000 1X

A.4.6.1.1 E-UTRAN FDD – cdma2000 1X Cell Reselection: cdma2000 1X is of Lower Priority

A.4.6.1.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD- cdma2000 1X inter-RAT cell reselection requirements specified in clause 4.2.2.5.5 when the cdma2000 1X cell is of lower priority.

The test scenario comprises of one cdma2000 1X and one E-UTRAN FDD cells as given in tables A.4.6.1.1.1-1, A.4.6.1.1.1-2 and A.4.6.1.1.1-3.

The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both E-UTRAN FDD cell 1 and cdma2000 1X cell 2 are already identified by the UE prior to the start of the test. At T1 the UE is camped on to cell 1. Cell 2 is of lower priority than cell 1. Cell 1 and cell 2 shall belong to different tracking areas.

Table A.4.6.1.1.1-1: General Test Parameters for E-UTRAN FDD - lower priority cdma2000 1X Cell Reselection

	Parameter			Comment
Initial condition	Active cell		Cell 1	E-UTRAN FDD cell
	Neighbour cell		Cell 2	cdma2000 1X cell
Final condition	Active cell		Cell 2	cdma2000 1X cell is selecting
				during T2
DRX cycle length		S	1.28	
E-UTRA FDD RF	Channel Number		1	Only one FDD carrier frequency
				is used.
E-UTRA FDD Cha	annel Bandwidth (BW _{channel})	MHz	10	
cdma2000 1X RF Channel Number			1	Only one cdma2000 1X carrier
				frequency is used.
E-UTRA FDD PR	E-UTRA FDD PRACH configuration		4	As specified in table 5.7.1-2 in
				TS 36.211
E_UTRA FDD Access Barring Information		-	Not Sent	No additional delays in random
				access procedure.
T1		S	30	
T2		s	30	

Table A.4.6.1.1.1-2: Cell Specific Test Parameters for E-UTRAN FDD (Cell # 1)

Parameter	Unit	Ce	Cell 1		
		T1	T2		
E-UTRA RF Channel number		1			
BW _{channel}	MHz	1	10		
OCNG Patterns defined in A.3.2.1.2					
(OP.2 FDD)		OP.2	OP.2 FDD		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB	0			
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB				
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
N_{oc} Note 2	dBm/15 kHz	-9	-98		
RSRP Note 3	dBm/15 KHz	-89	-102		
\hat{E}_{s}/I_{ot}	dB	9	-4		
\hat{E}_s/N_{oc}	dB	9	-4		
Treselection _{EUTRAN}	S	(Ö		
Snonintrasearch	dB	Not	Not sent		
cellReselectionPriority	-	1			
Qrxlevmin	dBm	-140			
Qrxlevminoffset	dB	0			
Pcompensation	dB	()		
S _{Serving} Cell	dB	51	38		
Thresh _{serving, low}	dB	4	4		
Propagation Condition		AWGN			
N. (4 00NO L III L L II					

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Parameter Unit Cell 2 <u>T1</u> **T2** cdma2000 1X RF Channel Number Pilot E_c -7 dB I_{or} Sync E_c dB -16 I_{or} Paging E_c (4.8 kbps) dB -12 \hat{I}_{or}/I_{oc} dB 0 dBm/ 1.2288 I_{oc} -55 MHz CDMA2000 1xRTT Pilot Strength dB -10 -10 AWGN **Propagation Condition** -20 SnonServingCell,x Treselection 0 s oneXRTT-CellReselectionPriority 0 Thresh_{x, low} -28

Table A.4.6.1.1.1-3: Cell Specific Test Parameters for cdma2000 1X (cell # 2)

A.4.6.1.1.2 Test Requirements

The cell reselection delay to lower priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2 and starts to send access probe preambles on the Access Channel on cell 2.

The cell re-selection delay to the lower priority cell 2 shall be less than 21 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to lower priority cell can be expressed as: $T_{evaluatecdma2000~1X} + T_{SI-cdma2000~1X}$

Where:

 $T_{evaluatcdma2000 \ 1X}$ See Table 4.2.2.5.5-1

 $T_{SI\text{-}cdma2000\ IX}$ Maximum repetition period of relevant system information blocks that need to be received by the UE to camp on cell 2; 1280 ms is assumed in this test case.

This gives a total of 20.48 s for the lower priority cell reselection, allow 21 s in the test case.

A.4.6.2 E-UTRAN TDD - cdma2000 1X

A.4.6.2.1 E-UTRAN TDD –cdma2000 1X Cell Reselection: cdma2000 1X is of Lower Priority

A.4.6.2.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN TDD- cdma2000 1X inter-RAT cell reselection requirements specified in clause 4.2.2.5.5 when the cdma2000 1X cell is of lower priority.

The test scenario comprises of one cdma2000 1X and one E-UTRAN TDD cells as given in tables A.4.6.2.1.1-1, A.4.6.2.1.1-2 and A.4.6.2.1.1-3.

The test consists of two successive time periods, with time duration of T1 and T2 respectively. Both E-UTRAN TDD cell 1 and cdma2000 1X cell 2 are already identified by the UE prior to the start of the test. At T1 the UE is camped on to cell 1. Cell 2 is of lower priority than cell 1. Cell 1 and cell 2 shall belong to different tracking areas.

Table A.4.6.2.1.1-1: General Test Parameters for E-UTRAN TDD - lower priority cdma2000 1X Cell Reselection

	Parameter	Unit	Value	Comment
Initial condition	Active cell		Cell 1	E-UTRAN TDD cell
	Neighbour cell		Cell 2	cdma2000 1X cell
Final condition	Active cell		Cell 2	cdma2000 1X cell is selecting during T2
DRX cycle length	DRX cycle length		1.28	
E-UTRA TDD RF Channel Number			1	Only one TDD carrier frequency is used.
E-UTRA TDD Channel Bandwidth (BWchannel)		MHz	10	
cdma2000 1X RF Channel Number			1	Only one cdma2000 1X carrier frequency is used.
E-UTRA TDD PR	ACH configuration		53	As specified in table 5.7.1-3 in TS 36.211
Uplink-downlink configuration of cell 1			1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1			6	As specified in table 4.2.1 in TS 36.211
E_UTRA TDD Ac	cess Barring Information	-	Not Sent	No additional delays in random access procedure.
T1		S	30	
T2		S	30	

Table A.4.6.2.1.1-2: Cell Specific Test Parameters for E-UTRAN TDD (Cell # 1)

Parameter	Unit	Cell 1		
		T1	T2	
E-UTRA RF Channel number			1	
BW _{channel}	MHz	10		
OCNG Patterns defined in A.3.2.2.2				
(OP.2 TDD)		OP.2 TDD		
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB	0		
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB			
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
$N_{oc}^{ m Note 2}$	dBm/15 kHz	-98		
RSRP Note 3	dBm/15 KHz	-89	-102	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	9	-4	
\hat{E}_s/N_{oc}	dB	9	-4	
Treselection _{EUTRAN}	S	Ö		
Snonintrasearch	dB	Not sent		
cellReselectionPriority	-		1	
Qrxlevmin	dBm	-140		
Qrxlevminoffset	dB	0		
Pcompensation	dB		0	
ServingCell	dB	51	38	
Thresh _{serving, low}	dB	44		
Propagation Condition		AWGN		

Note 1: CNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Iterference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: SRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Parameter Unit Cell 2 T1 **T2** cdma2000 1X RF Channel Number Pilot E_c -7 dB I_{or} Sync E_c dB -16 Paging E_c (4.8 kbps) dB -12 \hat{I}_{or}/I_{oc} dB 0 dBm/ 1.2288 I_{oc} -55 MHz CDMA2000 1xRTT Pilot Strength dB -10 -10 AWGN **Propagation Condition** -20 SnonServingCell,x 0 Treselection s oneXRTT-CellReselectionPriority 0 Thresh_{x, low} -28

Table A.4.6.2.1.1-3: Cell Specific Test Parameters for cdma2000 1X (cell # 2)

A.4.6.2.1.2 Test Requirements

The cell reselection delay to lower priority is defined as the time from the beginning of time period T2, to the moment when the UE camps on cell 2 and starts to send access probe preambles on the Access Channel on cell 2.

The cell re-selection delay to the lower priority cell 2 shall be less than 21 s.

The rate of correct cell reselections observed during repeated tests shall be at least 90%.

NOTE: The cell re-selection delay to lower priority cell can be expressed as: $T_{evaluatecdma2000~1X} + T_{SI-cdma2000~1X}$

Where:

 $T_{evaluatcdma2000 1X}$ See Table 4.2.2.5.5-1

 $T_{SI\text{-}cdma2000\ IX}$ Maximum repetition period of relevant system information blocks that need to be received by the UE to camp on cell 2; 1280 ms is assumed in this test case.

This gives a total of 20.48 s for the lower priority cell reselection, allow 21 s in the test case.

A.5 E-UTRAN RRC CONNECTED Mode Mobility

A.5.1 E-UTRAN Handover

A.5.1.1 E-UTRAN FDD - FDD Intra frequency handover

A.5.1.1.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-FDD intra frequency handover requirements specified in clause 5.1.2.1.

The test scenario comprises of 1 E-UTRA FDD carrier and 2 cells as given in tables A.5.1.1.1-1 and A.5.1.1.1-2. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

E-UTRAN shall send a RRC message implying handover to cell 2. The RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3. T3 is defined as the end of the last TTI containing the RRC message implying handover.

Table A.5.1.1.1-1: General test parameters for E-UTRAN FDD-FDD intra frequency handover test case

Par	ameter	Unit	Value	Comment
PDSCH parameter	rs .		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/F	PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chann	nel Number		1	Only one FDD carrier frequency is used.
Channel Bandwidtl	h (BW _{channel})	MHz	10	
A3-Offset		dB	0	
Hysteresis		dB	0	
Time To Trigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX				OFF
CP length			Normal	
Access Barring Info	ormation	-	Not Sent	No additional delays in random access procedure.
PRACH configuration			4	As specified in table 5.7.1-2 in TS 36.211
Time offset between	Time offset between cells		3 ms	Asynchronous cells
T1		S	5	
T2		S	≤5	
T3		S	1	

Table A.5.1.1.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra frequency handover test case

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 FDD	OP.2 FDD	OP.1 FDD
defined in A.3.2.1.1		FDD	FDD	FDD			
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		_			_	
PDCCH_RA	dB		0			0	
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	8	-3.3	-3.3	-Infinity	2.36	2.36
$N_{oc}^{ m Note~2}$	dBm/15 KHz				-98	•	
\hat{E}_s/N_{oc}	dB	8	8	8	- Infinity	11	11
RSRP Note 3	dBm/15 KHz	-90	-90	-90	- Infinity	-87	-87
Propagation Condition					AWGN		

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.5.1.1.2Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + $T_{interrupt}$, where:

RRC procedure delay = 15 ms and is specified in clause 11.2 in TS 36.331 [2].

 $T_{interrupt} = 35$ ms in the test; $T_{interrupt}$ is defined in clause 5.1.2.1.2.

This gives a total of 50 ms.

A.5.1.2 E-UTRAN TDD - TDD Intra frequency handover

A.5.1.2.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-TDD intra frequency handover requirements specified in clause 5.2.2.4.

The test scenario comprises of 1 E-UTRA TDD carrier and 2 cells as given in tables A.5.1.2.1-1 and A.5.1.2.1-2. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

E-UTRAN shall send a RRC message implying handover to cell 2. The RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3. T3 is defined as the end of the last TTI containing the RRC message implying handover.

Table A.5.1.2.1-1: General test parameters for E-UTRAN TDD-TDD Intra frequency handover test case

Pa	rameter	Unit	Value	Comment
			DL Reference Measurement	
PDSCH parameters			Channel R.0 TDD	As specified in clause A.3.1.1.2
•			DL Reference Measurement	·
PCFICH/PDCCHF	PHICH parameters		Channel R.6 TDD	As specified in clause A.3.1.2.2
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chan	nel Number		1	Only one TDD carrier frequency is used.
Channel Bandwid	th (BW _{channel})	MHz	10	
A3-Offset		dB	0	
Hysteresis		dB	0	
Time To Trigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX				OFF
CP length			Normal	
Access Barring In	formation	-	Not Sent	No additional delays in random access procedure.
Special subframe	configuration		6	As specified in table 4.2-1 in TS 36.211
Uplink-downlink c	onfiguration		1	As specified in table 4.2-2 in TS 36.211
PRACH configuration index			53	As specified in table 5.7.1-3 in TS 36.211
Time offset between cells			3 μs	Synchronous cells
T1		s	5	
T2		S	≤5	
T3		s	1	

Table A.5.1.2.1-2: Cell specific test parameters for E-UTRAN TDD-TDD Intra frequency handover test case

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 TDD	OP.2 TDD	OP.1 TDD
defined in A.3.2.2.1		TDD	TDD	TDD			
(OP.1 TDD) and in							
A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		•			•	
PDCCH_RA	dB		0			0	
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
${ m \hat{E}}_{ m s}/{ m I}_{ m ot}$	dB	8	-3.3	-3.3	-Infinity	2.36	2.36
$N_{oc}^{ m Note~2}$	dBm/15 KHz				-98		
\hat{E}_s/N_{oc}	dB	8	8	8	-Infinity	11	11
RSRP Note 3	dBm/15 KHz	-90	-90	-90	- Infinity	-87	-87
Propagation Condition		AWGN					
	e used such that	both cells a	re fully alloca	ated and a c	onstant total tra	ansmitted powe	er spectral

density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

RSRP levels have been derived from other parameters for information purposes. They are not settable Note 3: parameters themselves.

A.5.1.2.2 **Test Requirements**

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + $T_{interrupt}$, where:

RRC procedure delay = 15 ms and is specified in clause 11.2 in TS 36.331 [2].

 $T_{interrupt} = 35$ ms in the test; $T_{interrupt}$ is defined in clause 5.2.2.4.2.

This gives a total of 50 ms.

A.5.1.3 E-UTRAN FDD – FDD Inter frequency handover

A.5.1.3.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-FDD inter-frequency handover requirements specified in clause 5.1.2.1.

The test scenario comprises of two E-UTRA FDD carriers and one cell on each carrier as given in tables A.5.1.3.1-1 and A.5.1.3.1-2. PDCCHs indicating new transmissions shall be sent continuously to ensure that the UE would not enter the DRX state. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-frequency monitoring.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE.

Table A.5.1.3.1-1: General test parameters for E-UTRAN FDD-FDD Inter frequency handover test case

Par	ameter	Unit	Value	Comment
PDSCH parameter	rs		DL Reference Measurement	As specified in clause A.3.1.1.1
			Channel R.0 FDD	·
PCFICH/PDCCH/F	PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.1
			Channel R.6 FDD	
Initial conditions	Active cell		Cell 1	Cell 1 is on RF channel number 1
	Neighbouring cell		Cell 2	Cell 2 is on RF channel number 2
Final condition	Active cell		Cell 2	
E-UTRA RF chann	nel number		1, 2	Two FDD carriers are used
Channel Bandwidt	h (BW _{channel})	MHz	10	
A3-Offset		dB	-4	
Hysteresis		dB	0	
TimeToTrigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX			DRX_L	As specified in clause A.3.3
PRACH configurat	ion		4	As specified in table 5.7.1-2 in TS 36.211
Access Barring Inf	ormation	-	Not sent	No additional delays in random
				access procedure
Time offset between	en cells		3 ms	Asynchronous cells
Gap pattern configuration Id			0	As specified in Table 8.1.2.1-1
				started before T2 starts
T1		S	5	
T2		S	≤5	
T3		S	1	

Table A.5.1.3.1-2: Cell specific test parameters for E-UTRAN FDD-FDD Inter frequency handover test case

Parameter	Unit		Cell 1			Cell 2			
		T1	T2	Т3	T1	T2		T3	
E-UTRA RF Channel		1			2				
number									
BW _{channel}	MHz		10			10			
OCNG Patterns		OP.1	OP.1	OP.2 FDD	OP.2	OP.2 FDD	O	P.1 FDD	
defined in A.3.2.1.1		FDD	FDD		FDD				
(OP.1 FDD) and in									
A.3.2.1.2 (OP.2 FDD)									
PBCH_RA	dB								
PBCH_RB	dB								
PSS_RA	dB								
SSS_RA	dB								
PCFICH_RB	dB								
PHICH_RA	dB					_			
PHICH_RB	dB		0			0			
PDCCH_RA	dB								
PDCCH_RB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG_RA ^{Note 1}	dB								
OCNG_RB ^{Note 1}	dB								
\hat{E}_s/I_{ot}	dB	4	4	4	-Infinity	/ 7		7	
$N_{oc}^{ m Note~2}$	dBm/15 kHz	-98							
\hat{E}_s/N_{oc}	dB	4	4	4	-Infinity	7		7	
RSRP Note 3	dBm/15 KHz	-94	-94	-94	-Infinity	/ -91		-91	
Propagation Condition		AWGN							
	e used such that b	oth cells a	re fully alloca	ated and a con	stant total tra	ansmitted pow	er spe	ctral	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.5.1.3.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay $+ T_{interrupt}$, where:

RRC procedure delay = 15 ms and is specified in clause 11.2 in TS 36.331 [2].

 $T_{interrupt} = 35$ ms in the test; $T_{interrupt}$ is defined in clause 5.1.2.1.2.

This gives a total of 50 ms.

A.5.1.4 E-UTRAN TDD – TDD Inter frequency handover

A.5.1.4.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-TDD inter frequency handover requirements specified in clause 5.2.2.4.

The test scenario comprises of two E-UTRA TDD carriers and one cell on each carrier as given in tables Table A.5.1.4.1-1 and Table A.5.1.4.1-2. PDCCHs indicating new transmissions shall be sent continuously to ensure that the

UE would not enter the DRX state. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

E-UTRAN shall send a RRC message implying handover to cell 2. The RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3.

Table A.5.1.4.1-1: General test parameters for E-UTRAN TDD-TDD Inter frequency handover test case

Para	meter	Unit	Value	Comment
			DL Reference Measurement	
PDSCH paramete	PDSCH parameters		Channel R.0 TDD	As specified in clause A.3.1.1.2
			DL Reference Measurement	
PCFICH/PDCCH/	/PHICH		Channel R.6 TDD	As specified in clause A.3.1.2.2
parameters				
Gap Pattern Id			1	As specified in TS 36.133 clause 8.1.2.1.
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
E-UTRA RF chan	nel number		1, 2	Two TDD carriers are used
Channel Bandwic	th (BW _{channel})	MHz	10	
A3-Offset	, , , , , , , , , , , , , , , , , , , ,	dB	-4	
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	
DRX			DRX_L	As specified in clause A.3.3
CP length			Normal	
Access Barring In	nformation	-	Not Sent	No additional delays in random access procedure.
Special subframe	configuration		6	As specified in table 4.2-1 in TS 36.211
Uplink-downlink o	configuration		1	As specified in table 4.2-2 in TS 36.211
PRACH configuration			53	As specified in table 5.7.1-3 in TS 36.211
Time offset between	en cells		3 μs	Synchronous cells
T1		S	5	
T2		S	≤5	
T3		S	1	

Table A.5.1.4.1-2: Cell specific test parameters for E-UTRAN TDD-TDD Inter frequency handover test case

Parameter	Unit		Cell 1		Cell 2			
		T1	T2	Т3	T1	T2	T3	
E-UTRA RF Channel			1			2		
number								
BW _{channel}	MHz		10			10		
OCNG Patterns		OP.1	OP.1	OP.2 FDD	OP.2	OP.2 FDD	OP.1 FDD	
defined in A.3.2.1.1		FDD	FDD		FDD			
(OP.1 FDD) and in								
A.3.2.1.2 (OP.2 FDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB							
PHICH_RB	dB		0			0		
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{oc}}$	dB	4	4	4	-Infinity	7	7	
$N_{oc}^{ m Note~2}$	dBm/15 kHz	-98						
\hat{E}_s/N_{oc}	dB	4	4	4	-Infinity	7	7	
RSRP Note 3	dBm/15 KHz	-94	-94	-94	-infinity	-91	-91	
Propagation Condition		AWGN						
Note 1: OCNG shall b	e used such that b	oth cells a	e fully alloca	ated and a con	stant total tra	insmitted powe	r spectral	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.5.1.4.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + $T_{interrupt}$, where:

RRC procedure delay = 15 ms and is specified in clause 11.2 in TS 36.331 [2].

 $T_{interrupt} = 35$ ms in the test; $T_{interrupt}$ is defined in clause 5.2.2.4.2.

This gives a total of 50 ms.

A.5.1.5 E-UTRAN FDD – FDD Inter frequency handover: unknown target cell

A.5.1.5.1 Test Purpose and Environment

This test is to verify the FDD-FDD inter-frequency handover requirements for the case when the target cell is unknown as specified in clause 5.1.2.1.

The test scenario comprises of two E-UTRA FDD carriers and one cell on each carrier as given in tables A.5.1.5.1-1 and A.5.1.5.1-2. No gap patterns are configured in the test case. The test consists of two successive time periods, with time durations of T1 and T2 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and start to transmit the PRACH to Cell 2.

A RRC message implying handover shall be sent to the UE during period T1. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the UE.

Table A.5.1.5.1-1: General test parameters for the E-UTRAN FDD-FDD Inter frequency handover test case when the target cell is unknown

Para	ameter	Unit	Value	Comment
PDSCH parameter	'S		DL Reference Measurement	As specified in clause A.3.1.1.1
			Channel R.0 FDD	
PCFICH/PDCCH/F	PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.1
			Channel R.6 FDD	
Initial conditions	Active cell		Cell 1	Cell 1 is on RF channel number 1
	Neighbouring cell		Cell 2	Cell 2 is on RF channel number 2
Final condition	Active cell		Cell 2	
E-UTRA RF chann	el number		1, 2	Two FDD carriers are used
Channel Bandwidtl	h (BW _{channel})	MHz	10	
DRX			OFF	Non-DRX test
PRACH configuration	ion		4	As specified in table 5.7.1-2 in TS
				36.211
Access Barring Information		-	Not sent	No additional delays in random access procedure
Time offset between cells			3 ms	Asynchronous cells
T1		S	≤5	
T2		S	1	

Table A.5.1.5.1-2: Cell specific test parameters for the E-UTRAN FDD-FDD Inter frequency handover test case when the target cell is unknown

Parameter	Unit	Cell 1		Cell	2
		T1	T2	T1	T2
E-UTRA RF Channel		1		2	
number					
BW _{channel}	MHz	10	1	10	1
OCNG Patterns		OP.1 FDD	OP.2 FDD	OP.2 FDD	OP.1 FDD
defined in A.3.2.1.1					
(OP.1 FDD) and in					
A.3.2.1.2 (OP.2 FDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB			_	
PHICH_RB	dB	0		0	
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
\hat{E}_s/I_{ot}	dB	4	4	-Infinity	7
$N_{oc}^{ m Note~2}$	dBm/15 kHz			-98	
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7
RSRP Note 3	dBm/15 KHz	-94	-94	-Infinity	-91
Propagation Condition			,	AWGN	
Note 1: OCNG shall be density is ach	ieved for all OFDM	symbols.		stant total transmitted p	•

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over

subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{\it oc}$ to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.5.1.5.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 130 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + $T_{interrupt}$, where:

RRC procedure delay = 15 ms, which is specified in clause 11.2 in TS 36.331 [2].

 $T_{interrupt}$ = 115 ms in the test. See clause 5.1.2.1.2

This gives a total of 130 ms.

A.5.1.6 E-UTRAN TDD – TDD Inter frequency handover; unknown Target Cell

A.5.1.6.1 Test Purpose and Environment

This test is to verify the TDD-TDD inter-frequency handover requirements for the case when the target cell is unknown as specified in clause 5.2.2.4.

The test scenario comprises of two E-UTRA TDD carriers and one cell on each carrier as given in tables A.5.1.6.1-1 and A.5.1.6.1-2. No gap patterns are configured in the test case. The test consists of two successive time periods, with time durations of T1, T2 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE receives a RRC handover command from the network. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the UE.

Table A.5.1.6.1-1: General test parameters for the E-UTRAN TDD-TDD Inter-Frequency handover test case when the target cell is unknown

Pa	rameter	Unit	Value	Comment
PDSCH paramete	rs		DL Reference Measurement	As specified in clause A.3.1.1.2
-			Channel R.0 TDD	-
			DL Reference Measurement	As specified in clause A.3.1.2.2
PCFICH/PDCCH/I	PHICH parameters		Channel R.6 TDD	
Initial conditions	Active cell		Cell 1	Cell 1 is on RF channel number 1
	Neighbouring cell		Cell 2	Cell 2 is on RF channel number 2
Final condition	Active cell		Cell 2	
E-UTRA RF chann	nel number		1, 2	Two TDD carriers
DRX			OFF	Non-DRX test
Access Barring Inf	ormation	-	Not sent	No additional delays in random
				access procedure
Special subframe	configuration		6	As specified in table 4.2-1 in TS
				36.211
Uplink-downlink co	onfiguration		1	As specified in table 4.2-2 in TS
				36.211
PRACH configurat	tion		53	As specified in table 5.7.1-3 in TS
				36.211
Time offset between	en cells		3 μs	Synchronous cells
Gap pattern config	juration		-	No gap pattern configured
T1		S	≤5	
T2		S	1	

Table A.5.1.6.1-2: Cell specific test parameters for the E-UTRAN TDD-TDD Inter frequency handover test case when the target cell is unknown

Parameter	Unit	Ce	II 1	Ce	ell 2
		T1	T2	T1	T2
E-UTRA RF Channel		1 2			2
Number					
BW _{channel}	MHz	10 10			10
OCNG Patterns		OP.1 TDD	OP.2 TDD	OP.2 TDD	OP.1 TDD
defined in A.3.2.2.1					
(OP.1 TDD) and in					
A.3.2.2.2 (OP.2 TDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB		_		_
PHICH_RB	dB	(0		0
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$N_{oc}^{ m Note~3}$	dBm/15 kHz			-98	
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-93
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	-Infinity	5
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-93
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	5
Propagation Condition			A	WGN	
Note 1: OCNG shall be	e used such that he	oth cells are fully	allocated and a	constant total trai	nsmitted nower

- Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.
- Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
- Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.5.1.6.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 130 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + $T_{interrupt}$, where:

RRC procedure delay = 15 ms, which is specified in clause 11.2 in TS 36.331 [2].

 $T_{interrupt}$ = 115 ms in the test. See clause 5.2.2.4.2

This gives a total of 130 ms.

A.5.1.7 E-UTRAN FDD – TDD Inter frequency handover

A.5.1.7.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-TDD inter frequency handover requirements specified in clause 5.2.2.2.

The test scenario comprises of one E-UTRA FDD cell and one E-UTRA TDD cell as given in tables Table A.5.1.7.1-1, Table A.5.1.7.1-2 and Table A.5.1.7.1-3. PDCCHs indicating new transmissions shall be sent continuously to ensure that the UE would not enter the DRX state. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2.

E-UTRAN shall send a RRC message implying handover to cell 2. The RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3.

Table A.5.1.7.1-1: General test parameters for E-UTRAN FDD-TDD Inter frequency handover test case

Parameter	Unit	Value	Comment
Cell 1 PDSCH parameters		DL Reference Measurement	As specified in clause A.3.1.1.1
-		Channel R.0 FDD	
Cell 1 PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.1
parameters		Channel R.6 FDD	
		DL Reference Measurement	
Cell 2 PDSCH parameters		Channel R.0 TDD	As specified in clause A.3.1.1.2
		DL Reference Measurement	
Cell 2 PCFICH/PDCCH/PHICH		Channel R.6 TDD	As specified in clause A.3.1.2.2
parameters			
Gap Pattern Id		0	As specified in TS 36.133
I see I lee I lee		0.11.4	clause 8.1.2.1.
Initial conditions Active cell		Cell 1	
Neighbour cell		Cell 2	
Final conditions		Cell 2	
Cell 1 E-UTRA RF channel number		1	One FDD carrier is used
Cell 2 E-UTRA RF channel number		2	One TDD carrier is used
Channel Bandwidth (BW _{channel})	MHz	10	
A3-Offset	dB	-4	
Hysteresis	dB	0	
Time to Trigger	ms	0	
Filter coefficient		0	
DRX		DRX_L	As specified in clause A.3.3
CP length		Normal	
E-UTRA TDD Access Barring	-	Not Sent	No additional delays in random
Information			access procedure.
Special subframe configuration		6	As specified in table 4.2-1 in TS
			36.211. Applicable to cell 2.
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS
			36.211. Applicable to cell 2
E-UTRA TDD PRACH configuration		53	As specified in table 5.7.1-3 in TS 36.211
Time offset between cells		3 ms	Asynchronous cells
T1	S	5	
T2	s	≤5	
T3	S	1	

Table A.5.1.7.1-2: Cell specific test parameters for E-UTRAN FDD (cell #1) in E-UTRAN FDD-TDD Inter frequency handover test case

Parameter	Unit	Cell 1				
		T1	T2	T3		
E-UTRA RF Channel number		1				
BW _{channel}	MHz		10			
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD) and in A.3.2.1.2 (OP.2 FDD)		OP.1 FDD	OP.1 FDD	OP.2 FDD		
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB		0			
PHICH_RB	dB		0			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
\hat{E}_s/I_{ot}	dB	4	4	4		
$N_{oc}^{ m Note 2}$	dBm/15 kHz	-98				
\hat{E}_s/N_{oc}	dB	4	4	4		
RSRP Note 3	dBm/15 KHz	-94 -94 -94				
Propagation Condition		AWG	N			

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameter themselves.

Table A.5.1.7.1-3: Cell specific test parameters for E-UTRAN TDD (cell #2) in E-UTRAN FDD-TDD Inter frequency handover test case

Parameter	Unit	Cell 2					
		T1	T2	T3			
E-UTRA RF Channel number			2				
BW _{channel}	MHz		10				
OCNG Patterns defined in		OP.2 TDD	OP.2 TDD	OP.1 TDD			
A.3.2.2.1 (OP.1 TDD) and in							
A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		0				
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
\hat{E}_s/I_{ot}	dB	-Infinity	7	7			
$N_{oc}^{ m Note~2}$	dBm/15 kHz		-98				
\hat{E}_s/N_{oc}	dB	-Infinity	7	7			
RSRP Note 3	dBm/15 KHz	-Infinity -91 -		-91			
Propagation Condition		ÁWG	N				

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameter themselves.

A.5.1.7.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + $T_{interrupt}$, where:

RRC procedure delay = 15 ms and is specified in clause 11.2 in TS 36.331 [2].

 $T_{interrupt} = 35$ ms in the test; $T_{interrupt}$ is defined in clause 5.2.2.4.2.

This gives a total of 50 ms.

A.5.1.8 E-UTRAN TDD - FDD Inter frequency handover

A.5.1.8.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-FDD inter-frequency handover requirements specified in clause 5.2.2.3.

The test scenario comprises of one E-UTRA TDD cell and one E-UTRA FDD cell as given in tables Table A.5.1.8.1-1, Table A.5.1.8.1-2 and Table A.5.1.8.1-3. PDCCHs indicating new transmissions should be sent continuously to ensure that the UE would not enter the DRX state. The test consists of three successive time periods, with time durations of T1,

T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-frequency monitoring.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE.

Table A.5.1.8.1-1: General test parameters for E-UTRAN TDD-FDD Inter frequency handover test case

	meter	Unit	Value	Comment
Cell 1 PDSCH para			Channel R.0 TDD	As specified in clause A.3.1.1.2
Cell 1 PCFICH/PD0	CCH/PHICH			As specified in clause A.3.1.2.2
parameters			Channel R.6 TDD	
Cell 2 PDSCH para	ımeters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
Cell 2 PCFICH/PD0	CCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.1
parameters			Channel R.6 FDD	
Initial conditions	Active cell		Cell 1	Cell 1 is on RF channel number 1
	Neighbouring cell		Cell 2	Cell 2 is on RF channel number 2
Final condition	Active cell		Cell 2	
Cell 1 E-UTRA RF	channel number		1	One TDD carrier is used
Cell 2 E-UTRA RF	channel number		2	One FDD carrier is used
Channel Bandwidth	(BW _{channel})	MHz	10	
A3-Offset		dB	-4	
Hysteresis		dB	0	
TimeToTrigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX			DRX_L	As specified in clause A.3.3
E-UTRA FDD PRA	CH configuration		4	As specified in table 5.7.1-2 in TS 36.211
E-UTRA FDD Acce Information	ss Barring	-	Not sent	No additional delays in random access procedure
Time offset betwee	n cells		3 ms	Asynchronous cells
Gap pattern configuration Id			0	As specified in Table 8.1.2.1-1 started before T2 starts
T1		S	5	
T2		S	≤5	
T3		S	1	

Table A.5.1.8.1-2: Cell specific test parameters for E-UTRAN TDD (cell #1) in E-UTRAN TDD-FDD Inter frequency handover test case

Parameter	Unit		Cell 1		
		T1	T2	T3	
E-UTRA RF Channel number		1			
BW _{channel}	MHz		10		
OCNG Patterns defined in		OP.1 TDD	OP.1 TDD	OP.2 TDD	
A.3.2.2.1 (OP.1 TDD) and in					
A.3.2.2.2 (OP.2 TDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB		_		
PHICH_RB	dB		0		
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
\hat{E}_s/I_{ot}	dB	4	4	4	
$N_{oc}^{ m Note 2}$	dBm/15 kHz	-98			
\hat{E}_s/N_{oc}	dB	4	4	4	
RSRP Note 3	dBm/15 KHz	-94 -94 -94			
Propagation Condition		AWG	N		

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameter themselves.

Table A.5.1.8.1-3: Cell specific test parameters for E-UTRAN FDD (cell #2) in E-UTRAN TDD-FDD Inter frequency handover test case

Parameter	Unit		Cell 2	
		T1	T2	T3
E-UTRA RF Channel number			2	
BW _{channel}	MHz		10	
OCNG Patterns defined in		OP.2 FDD	OP.2 FDD	OP.1 FDD
A.3.2.1.1 (OP.1 FDD) and in				
A.3.2.1.2 (OP.2 FDD)				
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB		_	
PHICH_RB	dB		0	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
\hat{E}_s/I_{ot}	dB	-Infinity	7	7
$N_{oc}^{ m Note~2}$	dBm/15 kHz		-98	
\hat{E}_s/N_{oc}	dB	-Infinity	7	7
RSRP Note 3	dBm/15 KHz	-Infinity	-91	
Propagation Condition		AWG	N	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameter themselves.

A.5.1.8.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 15 ms and is specified in clause 11.2 in TS 36.331 [2].

 $T_{interrupt} = 35$ ms in the test; $T_{interrupt}$ is defined in clause 5.1.2.1.2.

This gives a total of 50 ms.

A.5.1.9 E-UTRAN FDD - FDD Intra frequency handover for 5MHz bandwidth

A.5.1.9.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.5.1.1. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.5.1.9.1-1 and A.5.1.9.1-2 will replace the values of corresponding parameters in Tables A.5.1.1.1-1 and A.5.1.1.1-2.

Table A.5.1.9.1-1: General test parameters for E-UTRAN FDD-FDD intra frequency handover test case, 5MHz

Parameter	Unit	Value	Comment		
PDSCH parameters			As specified in clause A.3.1.1.1		
		Channel R.5 FDD			
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.1		
		Channel R.11 FDD			
Channel Bandwidth (BW _{channel})	MHz	5			
Note 1: See Table A.5.1.1.1-1 for other general test parameters.					
Note 2: This test is performed according to the principle defined in section A.3.7.2					

Table A.5.1.9.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra frequency handover test case, 5MHz

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	T3	T1	T2	T3
BW _{channel}	MHz		5			5	
OCNG Patterns		OP.15	OP.15	OP.16	OP.16 FDD	OP.16 FDD	OP.15 FDD
defined in A.3.2.1.15		FDD	FDD	FDD			
(OP.15 FDD) and in							
A.3.2.1.16 (OP.16							
FDD)							
Note 1: See Table A.5.1.1.1-2 for other cell-specific test parameters.							

A.5.1.9.2 Test Requirements

The requirements defined in section A.5.1.1.2 shall apply to this test case.

A.5.1.10 E-UTRAN FDD - FDD Intra frequency handover for UE category 0

A.5.1.10.1 Test Purpose and Environment

This test is to verify the requirement for the FDD-FDD intra frequency handover requirements specified in clause 5.1.2.1.

The test scenario comprises of 1 E-UTRA FDD carrier and 2 cells as given in tables A.5.1.10.1-1 and A.5.1.10.1-2. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

E-UTRAN shall send a RRC message implying handover to cell 2. The RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3. T3 is defined as the end of the last TTI containing the RRC message implying handover.

Table A.5.1.10.1-1: General test parameters for E-UTRAN FDD-FDD intra frequency handover test case

Para	ameter	Unit	Value	Comment
PDSCH parameter	'S		DL Reference Measurement	As specified in clause A.3.1.1.3
-			Channel R.13 FDD	·
PCFICH/PDCCH/F	PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.1
			Channel R.6 FDD	
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chanr	nel Number		1	Only one FDD carrier frequency is used.
Channel Bandwidtl	h (BW _{channel})	MHz	10	
A3-Offset		dB	0	
Hysteresis		dB	0	
Time To Trigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX				OFF
CP length			Normal	
Access Barring Info	ess Barring Information -		Not Sent	No additional delays in random access procedure.
PRACH configuration			4	As specified in table 5.7.1-2 in TS 36.211
Time offset between	en cells		3 ms	Asynchronous cells
T1		S	5	
T2		S	≤5	
T3		S	1	

Table A.5.1.10.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra frequency handover test case

Parameter	Unit		Cell 1			Cell 2			
		T1	T2	T3	T1	T2	T3		
E-UTRA RF Channel			1	•		1	•		
Number									
BW _{channel}	MHz		10			10			
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 FDD	OP.2 FDD	OP.1 FDD		
defined in A.3.2.1.1		FDD	FDD	FDD					
(OP.1 FDD) and in									
A.3.2.1.2 (OP.2 FDD)									
PBCH_RA	dB								
PBCH_RB	dB								
PSS_RA	dB								
SSS_RA	dB								
PCFICH_RB	dB								
PHICH_RA	dB								
PHICH_RB	dB		•						
PDCCH_RA	dB		0			0			
PDCCH_RB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG_RA ^{Note 1}	dB								
OCNG_RB ^{Note 1}	dB								
\hat{E}_{s}/I_{ot}	dB	8	-3.3	-3.3	-Infinity	2.36	2.36		
$N_{oc}^{ m Note 2}$	dBm/15 KHz				-98	<u> </u>			
\hat{E}_s/N_{oc}	dB	8	8	8	- Infinity	11	11		
RSRP Note 3	dBm/15 KHz	-90	-90	-90	- Infinity	-87	-87		
Propagation Condition			AWGN						
	ne used such that	such that both cells are fully allocated and a constant total transmitted power spectral							

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.5.1.10.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 15 ms and is specified in clause 11.2 in TS 36.331 [2].

 $T_{interrupt} = 35$ ms in the test; $T_{interrupt}$ is defined in clause 5.1.2.1.2.

This gives a total of 50 ms.

A.5.1.11 E-UTRAN HD - FDD Intra frequency handover for UE category 0

A.5.1.11.1 Test Purpose and Environment

This test is to verify the requirement for the HD-FDD intra frequency handover requirements specified in clause 5.2.2.5.

The test scenario comprises of 1 E-UTRA FDD carrier and 2 cells as given in tables A.5.1.11.1-1 and A.5.1.11.1-2. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

E-UTRAN shall send a RRC message implying handover to cell 2. The RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3. T3 is defined as the end of the last TTI containing the RRC message implying handover.

Table A.5.1.11.1-1: General test parameters for E-UTRAN HD-FDD intra frequency handover test case

Par	ameter	Unit	Value	Comment
PDSCH parameter	rs .		DL Reference Measurement Channel R.1 HD-FDD	As specified in clause A.3.1.1.4
PCFICH/PDCCH/F	PHICH parameters		DL Reference Measurement Channel R.3 HD-FDD	As specified in clause A.3.1.2.3
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chann	nel Number		1	Only one FDD carrier frequency is used.
Channel Bandwidtl	h (BW _{channel})	MHz	10	
A3-Offset		dB	0	
Hysteresis		dB	0	
Time To Trigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX				OFF
CP length			Normal	
Access Barring Info	ormation	-	Not Sent	No additional delays in random access procedure.
PRACH configurat	PRACH configuration		4	As specified in table 5.7.1-2 in TS 36.211
Time offset between	en cells		3 ms	Asynchronous cells
T1		S	5	
T2	·	S	≤5	
T3		S	1	

Table A.5.1.11.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra frequency handover test case

Parameter	Unit		Cell 1			Cell 2			
		T1	T2	T3	T1	T2	Т3		
E-UTRA RF Channel			1			1			
Number									
BW _{channel}	MHz		10			10			
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 FDD	OP.2 FDD	OP.1 FDD		
defined in A.3.2.1.1		FDD	FDD	FDD					
(OP.1 FDD) and in									
A.3.2.1.2 (OP.2 FDD)									
PBCH_RA	dB								
PBCH_RB	dB								
PSS_RA	dB								
SSS_RA	dB								
PCFICH_RB	dB								
PHICH_RA	dB								
PHICH_RB	dB		•						
PDCCH_RA	dB		0			0			
PDCCH_RB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG_RA ^{Note 1}	dB								
OCNG_RB ^{Note 1}	dB								
\hat{E}_{s}/I_{ot}	dB	8	-3.3	-3.3	-Infinity	2.36	2.36		
$N_{oc}^{ m Note~2}$	dBm/15 KHz	-98					·		
\hat{E}_s/N_{oc}	dB	8	8	8	- Infinity	11	11		
RSRP Note 3	dBm/15 KHz	-90	-90	-90	- Infinity	-87	-87		
Propagation Condition			AWGN						
Note 1: OCNG shall b	Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral								

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.5.1.11.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 15 ms and is specified in clause 11.2 in TS 36.331 [2].

 $T_{interrupt} = 35$ ms in the test; $T_{interrupt}$ is defined in clause 5.2.2.5.2.

This gives a total of 50 ms.

A.5.1.12 E-UTRAN TDD - TDD Intra frequency handover for UE category 0

A.5.1.12.1 Test Purpose and Environment

This test is to verify the requirement for the TDD-TDD intra frequency handover requirements specified in clause 5.2.2.4.

The test scenario comprises of 1 E-UTRA TDD carrier and 2 cells as given in tables A.5.1.12.1-1 and A.5.1.12.1-2. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

E-UTRAN shall send a RRC message implying handover to cell 2. The RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event A3. T3 is defined as the end of the last TTI containing the RRC message implying handover.

Table A.5.1.12.1-1: General test parameters for E-UTRAN TDD-TDD Intra frequency handover test case

Par	ameter	Unit	Value	Comment
PDSCH parameter	PDSCH parameters		Channel R.12 TDD	As specified in clause A.3.1.1.5
PCFICH/PDCCHP	HICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chann	nel Number		1	Only one TDD carrier frequency is used.
Channel Bandwidtl	h (BW _{channel})	MHz	10	
A3-Offset		dB	0	
Hysteresis		dB	0	
Time To Trigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX				OFF
CP length			Normal	
Access Barring Info	ormation	-	Not Sent	No additional delays in random access procedure.
Special subframe of	configuration		6	As specified in table 4.2-1 in TS 36.211
Uplink-downlink configuration			1	As specified in table 4.2-2 in TS 36.211
PRACH configuration index			53	As specified in table 5.7.1-3 in TS 36.211
Time offset between cells			3 μs	Synchronous cells
T1		S	5	
T2		S	≤5	
T3		S	1	

Table A.5.1.12.1-2: Cell specific test parameters for E-UTRAN TDD-TDD Intra frequency handover test case

Parameter	Unit		Cell 1			Cell 2		
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel			1			1		
Number								
BW _{channel}	MHz		10			10		
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 TDD	OP.2 TDD	OP.1 TDD	
defined in A.3.2.2.1		TDD	TDD	TDD				
(OP.1 TDD) and in								
A.3.2.2.2 (OP.2 TDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB							
PHICH_RB	dB		0			•		
PDCCH_RA	dB		0			0		
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
\hat{E}_{s}/I_{ot}	dB	8	-3.3	-3.3	-Infinity	2.36	2.36	
$N_{oc}^{ m Note~2}$	dBm/15 KHz				-98	•	•	
\hat{E}_s/N_{oc}	dB	8	8	8	-Infinity	11	11	
RSRP Note 3	dBm/15 KHz	-90	-90	-90	- Infinity	-87	-87	
Propagation Condition					AWGN	II.		
Note 1: OCNG shall b	e used such that	both cells a	re fully alloc			ansmitted power	er spectral	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.5.1.12.2 Test Requirements

The UE shall start to transmit the PRACH to Cell 2 less than 50 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + $T_{interrupt}$, where:

RRC procedure delay = 15 ms and is specified in clause 11.2 in TS 36.331 [2].

 $T_{interrupt} = 35$ ms in the test; $T_{interrupt}$ is defined in clause 5.2.2.4.2.

This gives a total of 50 ms.

A.5.2 E-UTRAN Handover to other RATs

A.5.2.1 E-UTRAN FDD – UTRAN FDD Handover

A.5.2.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to UTRAN FDD handover requirements specified in clause 5.3.1.

The test parameters are given in Tables A.5.2.1.1-1, A.5.2.1.1-2 and A.5.2.1.1-3. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, Cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-RAT frequency monitoring.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Table A.5.2.1.1-1: General test parameters for E-UTRAN FDD to UTRAN FDD handover test case

Parameter		Unit	Value	Comment
PDSCH parameter	'S		DL Reference Measurement	As specified in clause A.3.1.1.1
			Channel R.0 FDD	·
PCFICH/PDCCH/F	PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.1
	•		Channel R.6 FDD	•
Initial conditions	Active cell		Cell 1	E-UTRAN cell
	Neighbouring cell		Cell 2	UTRAN cell
Final condition	Active cell		Cell 2	UTRAN cell
Channel Bandwidt	h (BW _{channel})	MHz	10	
Gap Pattern Id			0	As specified in Table 8.1.2.1-1 started before T2 starts
E-UTRAN FDD me	easurement quantity		RSRP	Started before 12 Starts
Inter-RAT (UTRAN quantity	FDD) measurement		CPICH Ec/N0	
b2-Threshold1		dBm	-90	Absolute E-UTRAN RSRP threshold for event B2
b2-Threshold2-UTRA		dB	-18	Absolute UTRAN CPICH Ec/lo threshold for event B2
Hysteresis		dB	0	
TimeToTrigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	Non-DRX test
Access Barring Inf	ormation	-	Not sent	No additional delays in random access procedure
E-UTRA RF Chani	nel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth (BWchannel)		MHz	10	
UTRA RF Channe	Number		1	One UTRA FDD carrier frequency is used.
Monitored UTRA FDD cell list size			12	UTRA cells on UTRA RF channel 1 provided in the cell before T2.
Post-verification pe	eriod		False	
T1		S	5	
T2		S	≤5	
T3		s	1	

Table A.5.2.1.1-2: Cell specific test parameters for E-UTRAN FDD to UTRAN FDD handover test case (cell 1)

Parameter	Unit	it Cell 1 (E-UTRA)		RA)		
		T1	T2	T3		
E-UTRA RF Channel			1			
number						
BW _{channel}	MHz		10			
OCNG Patterns		OP.1	OP.1	OP.2		
defined in A.3.2.1.1		FDD	FDD	FDD		
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB]				
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB	1				
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
\hat{E}_s/I_{ot}	dB	0	0	0		
N_{oc}	dBm/15 kHz		-98			
\hat{E}_s/N_{oc}	dB	0	0	0		
RSRP Note 2	dBm/15 KHz	-98	-98	-98		
lo Note 2	dBm/9 MHz	-67.21	-67.21	-67.21		
Propagation Condition			AWGN	•		
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all						

Note 2: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.5.2.1.1-3: Cell specific test parameters for E-UTRAN FDD to UTRAN FDD handover test case (cell 2)

Parameter	Unit	Ce	II 2 (UTR	A)
		T1	T2	Т3
CPICH_Ec/lor	dB		-10	
PCCPCH_Ec/lor	dB		-12	
SCH_Ec/lor	dB		-12	
PICH_Ec/lor	dB		-15	
DCH_Ec/lor	dB	N/A	N/A	Note 1
OCNS_Ec/lor	dB	-0.941	0.941	Note 2
\hat{I}_{or}/I_{oc}	dB	-infinity	-1.8	-1.8
I_{oc}	dBm/3,84 MHz	-70	-70	-70
CPICH_Ec/Io	dB	-infinity	-14	-14
Propagation Condition			AWGN	

Note 1: The DPCH level is controlled by the power control loop

Note 2: The power of the OCNS channel that is added shall make
the total power from the cell to be equal to I_{or}.

A.5.2.1.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 190 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 50 ms, which is specified in clause 5.3.1.1.1.

 $T_{interrupt} = 140$ ms in the test; $T_{interrupt}$ is defined in clause 5.3.1.1.2.

This gives a total of 190 ms.

A.5.2.2 E-UTRAN TDD - UTRAN FDD Handover

A.5.2.2.1 Test Purpose and Environment

This test is to verify the E-UTRAN TDD – UTRAN FDD handover requirements specified in clause 5.3.1.

The test scenario comprises of one E-UTRAN TDD cell and one UTRAN FDD cell as given in the tables A.5.2.2.1-1, A5.2.2.1-2 and A.5.2.2.1-3. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. At start of time duration T1, the UE does not have any timing information of cell 2. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before the start of T2 to enable the monitoring of UTRAN FDD. A neighbouring cell list, including the UTRAN cell (cell2), shall be sent to the UE before T2 starts. During the time T2 cell 2 becomes detectable and the UE is expected to detect and send the measurement report. A RRC message implying handover shall be sent to the UE during T2, after the UE has reported event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Table A.5.2.2.1-1: General test parameters for E-UTRAN TDD-UTRAN FDD handover

Para	meter	Unit	Value	Comment
PDSCH parameter	s (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)			DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Initial conditions	Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
	Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
Final conditions	Active cell		Cell 2	
Special subframe of	configuration		6	As specified in table 4.2-1 in TS 36.211. Applicable to cell 1.
Uplink-downlink co	nfiguration		1	As specified in table 4.2-2 in TS 36.211. Applicable to cell 1
E-UTRAN TDD me	easurement quantity		RSRP	
quantity	FDD) measurement		CPICH Ec/lo	
b2-Threshold1		dBm	-90	Absolute E-UTRAN RSRP threshold for event B2
b2-Threshold2-UTRA		dB	-18	UTRAN FDD CPICH Ec/lo threshold for event B2
Hysteresis		dB	0	
DRX			OFF	No DRX configured.
Time to Trigger		ms	0	_
Filter coefficient			0	
CP length			Normal	Applicable to cell 1
Gap pattern config	uration Id		0	As specified in Table 8.1.2.1-1; to start before T2 starts
E-UTRA RF Chanr	nel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})		MHz	10	
UTRA RF Channel Number			1	One UTRA FDD carrier frequency is used.
Monitored UTRA FDD cell list size			12	UTRA cells on UTRA RF channel 1 provided in the cell list before T2.
Post-verification period			False	Post verification is not used.
T1		S	5	
T2		S	≤5	
T3		s	1	

Table A.5.2.2.1-2: Cell specific test parameters for E-UTRAN TDD (cell 1) for handover to UTRAN FDD (cell # 2)

Parameter	Unit	Cell 1 (E-UTRAN)				
		T1	T2	T3		
E-UTRA RF Channel			1			
Number						
BW _{channel}	MHz		10			
OCNG Pattern defined						
in A.3.2.2.1 (OP.1 TDD)		OP 1	TDD	OP.2 TDD		
and in A.3.2.2.2 (OP.2		01.1	100	01.2100		
TDD)						
PBCH_RA	=					
PBCH_RB]					
PSS_RA]					
SSS_RA	-					
PCFICH_RB	-					
PHICH_RA						
PHICH_RB	dB	0				
PDCCH_RA	-					
PDCCH_RB						
PDSCH_RA	-					
PDSCH_RB	-					
OCNG_RA ^{Note 1}	-					
OCNG_RB ^{Note 1}	15 /45111					
RSRP	dBm/15 kHz	-98	-98	-98		
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	0	0	0		
s / ot						
\hat{E}_s/N_{oc}	dB	0	0	0		
$\mathbf{L}_{s}/I\mathbf{V}_{oc}$	-	-				
N_{oc}	dBm/15 kHz		-98	I		
OC Note 2			T	1		
lo Note 2	dBm/9 MHz	-67.21	-67.21	-67.21		
Propagation Condition			AWGN			

Note 2: RSRP and lo levels have been derived from other parameters for information purposes.

They are not settable parameters themselves.

Table A.5.2.2.1-3: Cell specific test parameters for UTRAN FDD (cell # 2) for handover from E-UTRAN TDD cell (cell #1)

Parameter	Unit	Cell 1 (UTRA)			
		T1	T2	T3	
CPICH_Ec/lor	dB		-10		
PCCPCH_Ec/lor	dB		-12		
SCH_Ec/lor	dB		-12		
PICH_Ec/lor	dB		-15		
DPCH_Ec/lor	dB	N/A	N/A	Note 1	
OCNS	dB	-0.941	-0.941	Note 2	
\hat{I}_{or}/I_{oc}	dB	-infinity	-1.8	-1.8	
I_{oc}	dBm/3.84 MHz		-70		
CPICH_Ec/Io	dB	-infinity	-14	-14	
Propagation Condition			AWGN		
Note 1: The DPCH level is controlled by the power control loop					

Note 1: The DPCH level is controlled by the power control loop

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.

A.5.2.2.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 190 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 50 ms, which is specified in clause 5.1.1.1.1.

 $T_{interrupt} = 140$ ms in the test; $T_{interrupt}$ is defined in clause 5.3.1.1.2.

This gives a total of 190 ms.

A.5.2.3 E-UTRAN FDD- GSM Handover

A.5.2.3.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN to GSM cell handover delay specified in clause 5.3.3.

The test parameters are given in Table A.5.2.3.1 -1, A.5.2.3.1 -2 and A.5.2.3.1 -3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 shall be used. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

The RRC message implying handover to cell 2 shall be sent to the UE during period T2, after the UE has reported Event B1. The start of T3 is defined as the end of last E-UTRAN TTI containing the RRC message implying handover.

The requirements are also applicable for a UE not requiring measurement gap, in which case no measurement gap pattern should be sent for the parameters specified in Table A.5.2.3.1-1.

Table A.5.2.3.1 -1: General test parameters for E-UTRAN FDD-GSM handover

Para	meter	Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH, parameters	PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Gap Pattern Id			1	As specified in TS 36.133 section8.1.2.1.
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Inter-RAT measu	rement quantity		GSM Carrier RSSI	
Threshold other s	system	dBm	-80	Absolute GSM carrier RSSI threshold for event B1.
Hysteresis		dB	0	
Time to Trigger		ms	0	
Filter coefficient			0	L3 filtering is not used
DRX				OFF
T1		S	20	
T2	<u> </u>	S	7	
T3		S	1	

Table A. A.5.2.3.1 - 2: Cell Specific Parameters for Handover from E- UTRAN FDD to GSM cell case (cell 1)

Parameter	Unit	Се	II 1			
		T1, T2	Т3			
BW _{channel}	MHz	1	0			
OCNG Patterns						
defined in A.3.2.1.1						
(OP.1 FDD) and in		OP.1 FDD OP.2 FDD				
A.3.2.1.2 (OP.2						
FDD)						
PBCH_RA	dB					
PBCH_ RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_ RB	dB					
PHICH_ RA	dB					
PHICH_ RB	dB	(0			
PDCCH_ RA	dB					
PDCCH_ RB	dB					
PDSCH_ RA	dB					
PDSCH_ RB	dB					
OCNG_ RA Note1	dB					
OCNG_ RB Note1	dB					
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4				
$N_{oc}^{ m Note 2}$	dBm/15	-98 (AWGN)				
1 voc	kHz	30 (/11/014)				
\hat{E}_s/N_{oc}	dB	4				
RSRP Note 3	dBm/15kH z	-94				
Propagation		AVACAL				
Condition		AWGN				
		ch that cell 1 is fully allocated				
transmitted power spectral density is achieved for all OFDM symbols.						
Note 2: Interference from other cells and noise sources not specified in the test is						
assumed to be constant over subcarriers and time and shall be modelled as						
AWGN of appropriate power for $N_{\it oc}$ to be fulfilled.						
Note 3: RSRP levels have been derived from other parameters for information						
purposes. They are not settable parameters themselves.						

Table A.5.2.3.1 - 3: Cell Specific Parameters for Handover from E-UTRAN FDD to GSM cell case (cell 2)

Parameter	Unit	Cell 2 (GSM)		
Farameter	Onit	T1	T2, T3	
Absolute RF Channel		۸р	FCN 1	
Number		AK	FCN I	
RXLEV	dBm	-85	-75	

A.5.2.3.2 Test Requirements

The UE shall begin to send access bursts on the new DCCH of the target cell less than 100 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The test requirement in this test case is expressed as:

 $T_{Handover delay}$ = 90 ms (Table 5.3.3.2.1-1) + T_{offset} + T_{UL}

 T_{offset} : Equal to 4.65 ms, GSM timing uncertainty between the time from when the UE is ready to transmit until the start of the next timeslot in GSM 26 multiframe structure

 T_{UL} : Equal to 4.65 ms, the time the UE has to wait in case the next timeslot is an idle frame or a SACCH

frame.

This gives a total of 99.3 ms, allow 100 ms in the test case.

A.5.2.4 E-UTRAN TDD - UTRAN TDD Handover

A.5.2.4.1 Test Purpose and Environment

A.5.2.4.1.1 Void

A.5.2.4.1.2 1.28 Mcps TDD option

This test is to verify the requirement for E-UTRAN TDD to UTRAN TDD handover requirements specified in clause 5.3.2.

The test scenario comprises of 1 E-UTRA TDD cell and 1 UTRA TDD cell as given in tables Table A.5.2.4.1.2-1, Table A.5.2.4.1.2-2, and Table A.5.2.4.1.2-3. Gap pattern configuration #0 as defined in table 8.1.2.1-1 is provided.

The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively.

E-UTRAN shall send a RRC message implying handover to UE. The RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The end of the last TTI containing handover message is begin of T3 duration.

Table A.5.2.4.1.2-1: General test parameters for E-UTRA TDD to UTRA(1.28 Mcps TDD OPTION) handover test case

Parai	meter	Unit	Value	Comment
PDSCH parame	PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCC	H/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.2
parameters			Channel R.6 TDD	
Initial	Active cell		Cell 1	E-UTRA TDD cell
conditions	Neighbour cell		Cell 2	UTRA 1.28Mcps TDD Cell
Final conditions	Active cell		Cell 2	
Gap Pattern Id			0	As specified in TS 36.133 clause 8.1.2.1.
of cell 1	Uplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subfram of cell 1	Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
CP length of ce	CP length of cell 1		Normal	
Time offset bety	Time offset between cells		3 ms	Asynchronous cells
Access Barring	Information		Not Sent	No additional delays in random access procedure.
Assigned Sub-C	Channel		1	No additional delays in random
Number				access procedure due to ASC.
Hysteresis		dB	0	
Time To Trigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	
Ofn		dB	0	
Thresh1		dBm	-93	E-UTRA event B2 threshold
Thresh2		dBm	-80	UTRA event B2 threshold
T1		S	5	
T2		S	≤10	
T3		S	1	

Table A.5.2.4.1.2-2: Cell specific test parameters for E-UTRA TDD to UTRA TDD handover test case (cell 1)

Parameter	Unit	Cell 1						
		T1	T2	T3				
E-UTRA RF Channel		1						
Number								
BW _{channel}	MHz	10						
OCNG Pattern defined in								
A.3.2.2.1 (OP.1 TDD)		OP.1 TDD		OP.2				
and in A.3.2.1.2 (OP.2		01.1100		TDD				
TDD)			1					
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB							
PHICH_RB	dB	0	0	0				
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	dB	13	-3	-3				
\hat{E}_s/N_{oc}	dB	13	-3	-3				
N_{oc}	dBm/15kHz	-98						
RSRP Note 2	dBm/15kHz	-85	-101	-101				
SCH RP Note 2	dBm/15 kHz	-85	-101	-101				
lo Note 2	dBm/9MHz	-57.01	-68.45	-68.45				
Propagation Condition	AWGN							
Note 1: OCNG shall be used such that call is fully allocated and a constant								

Note 2: RSRP, SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves

Table A.5.2.4.1.2-3: Cell specific test parameters for cell search E-UTRA to UTRA case (cell 2)

Parameter	Unit	Cell 2 (UTRA)							
Timeslot Number		0			DwPTS				
		T1	T2	T3	T1	T2	T3		
UTRA RF Channel Number Note 21		Channel 2							
PCCPCH_Ec/lor	dB	-3							
DwPCH_Ec/lor	dB			0					
OCNS_Ec/lor	dB	-3							
\hat{I}_{or}/I_{oc}	dB	-3	11	11	-3	11	11		
I_{oc}	dBm/1.28 MHz	-80							
PCCPCH RSCP Note 2	dBm	-86	-72	-72	n.a.				
lo Note 2	dBm/1.28 MHz	-78.24	-68.67	-68.67					
Propagation Condition		AWGN							

Note 1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.

Note 2: PCCPCH_RSCP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.5.2.4.1.3 Void

A.5.2.4.2 Test Requirements

A.5.2.4.2.1 Void

A.5.2.4.2.2 1.28 Mcps TDD option

The UE shall start to transmit the SYNCH-UL sequence in the UpPTS to Cell 2 less than 120 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + $T_{interrupt}$, where:

RRC procedure delay = 50 ms, which is specified in clause 5.3.2.2.1.

 $T_{interrupt}$ is defined in clause 5.3.2.2.2. $T_{interrupt} = 70$ ms in the test as following:

$$T_{interrupt1} = T_{offset} + T_{UL} + 30*F_{SFN} + 20 \text{ ms}$$

 $T_{offset} = 10 \text{ ms}$; $T_{UL} = 10 \text{ ms}$; and $F_{SFN} = 1 \text{ for UE decoding SFN}$.

This gives a total of 120 ms.

A.5.2.4.2.3 Void

A.5.2.5 E-UTRAN FDD – UTRAN TDD Handover

A.5.2.5.1 Test Purpose and Environment

A.5.2.5.1.1 Void

A.5.2.5.1.2 1.28 Mcps TDD option

This test is to verify the requirement for the E-UTRAN FDD to UTRAN TDD handover requirements specified in clause 5.3.2.

The test scenario comprises of two cells, E-UTRA TDD cell1 and UTRA TDD cell2. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, Cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #1 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-RAT frequency monitoring. The test parameters are given in Tables A.5.2.5.1-1, A.5.2.5.1-2 and A.5.2.5.1-3.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Table A.5.2.5.1.2-1: General test parameters for E-UTRA FDD to UTRA (1.28 Mcps TDD option) handover test case

Parar	Parameter		Value	Comment
PDSCH paramet	PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH parameters	/PHICH		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Initial	Active cell		Cell 1	E-UTRA FDD cell
conditions	Neighbour cell		Cell 2	UTRA 1.28Mcps TDD Cell
Final conditions	Active cell		Cell 2	
Gap Pattern Id			1	As specified in TS 36.133 clause 8.1.2.1.
E-UTRAN FDD n			RSRP	
UTRAN TDD mea			RSCP	
CP length of cell	CP length of cell 1		Normal	
Access Barring Ir	Access Barring Information		Not Sent	No additional delays in random access procedure.
Assigned Sub-Channel Number			1	No additional delays in random access procedure due to ASC.
Hysteresis		dB	0	
Time To Trigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	
Ofn		dB	0	
Thresh1		dBm	-93	Absolute E-UTRAN RSRP threshold for event B2
Thresh2		dBm	-80S	Absolute UTRAN RSCP threshold for event B2
T1		S	5	
T2	·	S	≤ 10	
T3		S	1	

Table A.5.2.5.1.2-2: Cell specific test parameters for E-UTRAN FDD to UTRAN (1.28 Mcps TDD option) handover test case (cell 1)

Parameter	Unit	Cell 1 (E-UTRA)		
		T1	T2	T3
E-UTRA RF Channel			1	
number				
BW _{channel}	MHz		10	
OCNG Patterns		OP.1 FDD	OP.1 FDD	OP.2
defined in A.3.2.1.1				FDD
(OP.1 FDD) and in				
A.3.2.1.2 (OP.2 FDD)				
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB		0	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
\hat{E}_s/N_{oc}	dB	13	-3	-3
N_{oc}	dBm/15 kHz		-98	
\hat{E}_s/I_{ot}	dB	13	-3	-3
RSRP Note 2	dBm/15 KHz	-85	-101	-101
lo Note 2	dBm/9MHz	-57.01	-68.45	-68.45
Propagation Condition			AWGN	
Note 1: OCNG shall b	e used such that I	ooth cells are	fully allocated a	and a constant

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves

Table A.5.2.5.1.2-3: Cell specific test parameters for E-UTRAN FDD to UTRAN (1.28 Mcps TDD option) handover test case (cell 2)

Parameter	Unit			Cell 2 (U	ΓRA)		
Timeslot Number		0 Dv		DwPTS			
		T1	T2	T3	T1	T2	T3
UTRA RF Channel Number Note 21				Channe	el 2		
PCCPCH_Ec/lor	dB		-3				
DwPCH_Ec/lor	dB					0	
OCNS_Ec/lor	dB		-3				
\hat{I}_{or}/I_{oc}	dB	-3	11	11	-3	11	11
I_{oc}	dBm/1.28 MHz			-80			
PCCPCH RSCP Note 2	dBm	-86	-72	-72		n.a.	
lo Note 2	dBm/1.28 MHz	-78.24	-68.67	-68.67			
Propagation Condition				AWG	N		

Note 1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary

frequency's channel number.

Note 2: PCCPCH_RSCP and lo levels have been derived from other parameters for information

purposes. They are not settable parameters themselves.

A.5.2.5.1.3 Void

A.5.2.5.2 Test Requirements

A.5.2.5.2.1 Void

A.5.2.5.2.2 1.28 Mcps TDD option

The UE shall start to transmit the SYNCH-UL sequence in the UpPTS to Cell 2 less than 120 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 50 ms, which is specified in clause 5.3.2.2.1.

 $T_{interrupt}$ is defined in clause 5.3.2.2.2. $T_{interrupt} = 70$ ms in the test as following:

$$T_{interrupt1} = T_{offset} + T_{UL} + 30*F_{SFN} + 20 \text{ ms}$$

 $T_{offset} = 10 \text{ ms}$; $T_{UL} = 10 \text{ ms}$; and $F_{SFN} = 1 \text{ for UE decoding SFN}$.

This gives a total of 120 ms.

A.5.2.5.2.3 Void

A.5.2.6 E-UTRAN TDD - GSM Handover

A.5.2.6.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN to GSM cell handover delay specified in clause 5.3.3.

The test parameters are given in Table A.5.2.6.1-1, A.5.2.6.1-2 and A.5.2.6.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 shall be used. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time duration T1, the UE may not have any timing information of cell 2.

The RRC message implying handover to cell 2 shall be sent to the UE during period T2, after the UE has reported Event B1. The start of T3 is defined as the end of last E-UTRAN TTI containing the RRC message implying handover.

The requirements are also applicable for a UE not requiring measurement gap, in which case no measurement gap pattern should be sent for the parameters specified in Table A.5.2.6.1-1.

Table A.5.2.6.1-1: General test parameters for E-UTRAN TDD toGSM neighbours handover test case in AWGN propagation condition

Pa	rameter	Unit	Value	Comment
PDSCH paramete	PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH	/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Gap Pattern Id			1	As specified in TS 36.133 clause 8.1.2.1.
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
Uplink-downlink o	configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1			6	As specified in table 4.2.1 in TS 36.211
CP length of cell	1		Normal	
Inter-RAT measu	rement quantity		GSM Carrier RSSI	
E-UTRA RF Char	nnel Number		1	E-UTRA RF Channel Number
E-UTRA Channel (BW _{channel})	Bandwidth	MHz	10	E-UTRA Channel Bandwidth (BW _{channel})
Threshold other s	system	dBm	-80	Absolute GSM carrier RSSI threshold for event B1.
Hysteresis		dB	0	
Time to Trigger			0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	
T1		S	20	
T2		S	7	
T3		S	1	

Table A.5.2.6.1-2: Cell Specific Parameters for Handover E- UTRAN TDD to GSM handover test case

Parameter	Unit	Се	II 1
		T1, T2	Т3
E-UTRA RF Channel Number		1	1
BW _{channel}	MHz	1	0
OCNG Patterns defined in A.3.2.2.1 (OP.1 TDD) and in A.3.2.2.2 (OP.2 TDD)		OP.1 TDD	OP.2 TDD
PBCH_RA	dB		
PBCH_ RB	dB		
PSS_ RA	dB		
SSS_ RA	dB		
PCFICH_ RB	dB		
PHICH_ RA	dB		
PHICH_ RB	dB	()
PDCCH_ RA	dB		
PDCCH_ RB	dB		
PDSCH_ RA	dB		
PDSCH_ RB	dB		
OCNG_ RA Note1	dB		
OCNG_ RB Note1	dB		
\hat{E}_s/N_{oc}	dB	2	1
$N_{\it oc}$ Note 2	dBm/15 kHz	-98 (A	WGN)
\hat{E}_s/I_{ot}	dB	2	4
RSRP Note 3	dBm/15kHz	-g	94
Propagation Condition		AW	'GN

NOTE 1: OCNG shall be used such that cell 1 is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

NOTE 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled

NOTE 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.5.2.6.1-3: Cell Specific Parameters for Handover E-UTRAN to GSM cell case (cell 2)

Parameter	Unit	Cell 2 (GSM)		
Farameter	Onit	T1	T2, T3	
Absolute RF Channel		ARFCN 1		
Number				
RXLEV	dBm	-85	-75	

A.5.2.6.2 Test Requirements

The UE shall begin to send access bursts on the new DCCH of the target cell less than 100 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The test requirement in this test case is expressed as:

 $T_{\text{Handover delay}} = 90 \text{ ms} \text{ (Table 5.3.3.2.1-1)} + T_{\text{offset}} + T_{\text{UL}}$

T_{offset}: Equal to 4.65 ms, GSM timing uncertainty between the time from when the UE is ready to transmit until the start of the next timeslot in GSM 26 multiframe structure

 T_{UL} : Equal to 4.65 ms, the time the UE has to wait in case the next timeslot is an idle frame or a SACCH frame.

This gives a total of 99.3 ms, allow 100 ms in the test case.

A.5.2.7 E-UTRAN FDD – UTRAN FDD Handover; Unknown Target Cell

A.5.2.7.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to UTRAN FDD handover requirements for the case when the target cell is unknown as specified in clause 5.3.1.

The test parameters are given in Tables A.5.2.7.1-1, A.5.2.7.1-2 and A.5.2.7.1-3. The test consists of two successive time periods, with time durations of T1, T2. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, cell 2 becomes detectable and the UE receives a RRC handover command from the network. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. No Gap pattern configuration shall be used.

Table A.5.2.7.1-1: General test parameters for E-UTRAN FDD to UTRAN FDD handover test case

Par	ameter	Unit	Value	Comment
PDSCH paramete	PDSCH parameters		DL Reference Measurement	As specified in clause A.3.1.1.1
			Channel R.0 FDD	-
PCFICH/PDCCH/I	PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.1
	•		Channel R.6 FDD	-
Initial conditions	Active cell		Cell 1	E-UTRAN cell
	Neighbouring cell		Cell 2	UTRAN cell
Final condition	Active cell		Cell 2	UTRAN cell
Channel Bandwidt	th (BW _{channel})	MHz	10	
E-UTRAN FDD m	easurement quantity		RSRP	
Inter-RAT (UTRAN quantity	N FDD) measurement		CPICH Ec/N0	
DRX			OFF	Non-DRX test
Access Barring Information		-	Not sent	No additional delays in random
				access procedure
E-UTRA RF Channel Number			1	One E-UTRA FDD carrier
				frequency is used.
E-UTRA Channel	Bandwidth	MHz	10	
(BWchannel)				
UTRA RF Channel Number			1	One UTRA FDD carrier frequency
				is used.
Monitored UTRA FDD cell list size			12	UTRA cells on UTRA RF channel
				1 provided in the cell before T2.
Post-verification p	eriod		False	
T1		S	≤5	
T2		S	1	

Table A.5.2.7.1-2: Cell specific test parameters for E-UTRAN FDD to UTRAN FDD handover test case (cell 1)

Parameter	Unit	Cell 1 (E-UTRA)	
		T1	T2	
E-UTRA RF Channel			1	
number				
BW _{channel}	MHz	1	10	
OCNG Patterns defined in		OP.1 FDD	OP.2 FDD	
A.3.2.1.1 (OP.1 FDD) and in				
A.3.2.1.2 (OP.2 FDD)				
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	0		
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
\hat{E}_s/I_{ot}	dB	0	0	
$N_{oc}^{ m Note~2}$	dBm/15 kHz	-98		
\hat{E}_s/N_{oc}	dB	0	0	
RSRP Note 3	dBm/15 KHz	-98	-98	
Propagation Condition		AW	/GN	
Note 1: OCNG shall be use	d such that both	cells are fully	allocated and	
a constant total trar	nsmitted power s	spectral density	is achieved	
for all OFDM symbo		•		
Note 2: Interference from o				
the test is assumed	I to be constant	over subcarrier	s and time	
and shall be model	led as AWGN of	appropriate po	ower for N_{oc}	
to be fulfilled.				

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters

themselves.

Table A.5.2.7.1-3: Cell specific test parameters for E-UTRAN FDD to UTRAN FDD handover test case (cell 2)

Parameter	Unit Cell 2 (UTRA)		(UTRA)	
		T1	T2	
CPICH_Ec/lor	dB	-	·10	
PCCPCH_Ec/lor	dB	-	·12	
SCH_Ec/lor	dB	-	·12	
PICH_Ec/lor	dB	-15		
DCH_Ec/lor	dB	Note 1		
OCNS_Ec/lor	dB	Note 2		
\hat{I}_{or}/I_{oc}	dB	-infinity -1.8		
I_{oc}	dBm/3,84 MHz	-70 -70		
CPICH_Ec/lo	dB -infinity -14			
Propagation Condition	AWGN			

Note 1: The DPCH level is controlled by the power control loop

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.

A.5.2.7.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 290 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + $T_{interrupt}$, where:

RRC procedure delay is 50ms. See clause 5.3.1.1.1.

 $T_{interrupt}$ is 240ms. See clause 5.3.1.1.2.

This gives a total of 290ms in the test case.

A.5.2.8 E-UTRAN FDD - GSM Handover; Unknown Target Cell

A.5.2.8.1 Test Purpose and Environment

This test is to verify the E-UTRAN FDD to GSM handover requirements for the case when the target GSM cell is unknown as specified in clause 5.3.3.

The test parameters are given in Table A.5.2.8.1-1, A.5.2.8.1-2 and A.5.2.8.1-3 below. The test consists of two successive time periods, with time duration of T1, T2 respectively. At the start of time duration T1, the UE will not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE receives a RRC handover command from the network. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. No Gap pattern configuration shall be used.

Table A.5.2.8.1-1: General test parameters for E-UTRAN FDD to GSM handover test case; unknown target cell

Para	Parameter		Value	Comment
PDSCH paramete	ers		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH, parameters	/PHICH		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Gap Pattern Id			None	No measurement gaps shall be provided.
Initial conditions	Active cell		Cell 1	
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
DRX			OFF	No DRX configured
T1		S	7	
T2		S	1	

Table A.5.2.8.1 - 2: Cell specific parameters for cell # 1 in E-UTRAN FDD to GSM handover test case; unknown target cell

Parameter	Unit	Cell 1			
		T1	T2		
BW _{channel}	MHz		10		
OCNG Patterns					
defined in A.3.2.1.1					
(OP.1 FDD) and in		OP.1 FDD	OP.2 FDD		
A.3.2.1.2 (OP.2					
FDD)					
PBCH_RA	dB				
PBCH_ RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_ RB	dB				
PHICH_ RA	dB				
PHICH_ RB	dB		0		
PDCCH_ RA	dB				
PDCCH_ RB	dB				
PDSCH_RA	dB				
PDSCH_ RB OCNG_ RA Note1	dB				
	dB				
_	dB				
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4			
$N_{oc}^{ m Note~2}$	dBm/15 kHz	-98			
\hat{E}_s/N_{oc}	dB	4			
RSRP Note 3	dBm/15 kHz		-94		
Propagation	SDITT TO RETE	_	-		
Condition		A	WGN		
	all be used such t	hat cell 1 is fully allocate	d and a constant total		
transmitte	d power spectral	density is achieved for al	l OFDM symbols.		
		s and noise sources not s			
assumed t	o be constant over	er subcarriers and time a	nd shall be modelled as		
		er for N_{oc} to be fulfilled.			
AWGN of	appropriate powe	r tor $\frac{\partial c}{\partial t}$ to be fulfilled.			
		rived from other parameter			
purposes. They are not settable parameters themselves.					

Table A.5.2.8.1-3: Cell specific parameters for cell # 2 in E-UTRAN FDD to GSM handover test case; unknown target cell

Parameter	Unit	Cell 2 (GSM)		
Farameter	Onit	T1	T2	
Absolute RF Channel		ARFCN 1		
Number				
RXLEV	dBm	-Infinity	-75	

A.5.2.8.2 Test Requirements

The UE shall begin to send access bursts on the new DCCH of the target cell less than 200 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The test requirement in this test case is expressed as:

 $T_{Handover delay}$ = 190 ms (Table 5.3.3.2.1-1) + T_{offset} + T_{UL}

 T_{offset} : Equal to 4.65 ms is the GSM timing uncertainty from the time when the UE is ready to transmit until the start of the next timeslot in GSM 26 multiframe structure

T_{III}: Equal to 4.65 ms is the time the UE has to wait in case the next timeslot is an idle frame or a SACCH frame.

This gives a total of 199.3 ms, allow 200 ms in the test case.

A.5.2.9 E-UTRAN TDD - GSM Handover; Unknown Target Cell

A.5.2.9.1 Test Purpose and Environment

This test is to verify the E-UTRAN TDD to GSM handover requirements for the case when the target GSM cell is unknown as specified in clause 5.3.3.

The test parameters are given in Table A.5.2.9.1 -1, A.5.2.9.1 -2 and A.5.2.9.1 -3 below. The test consists of two successive time periods, with time duration of T1, T2 respectively. At the start of time duration T1, the UE will not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE receives a RRC handover command from the network. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. No Gap pattern configuration shall be used.

Table A.5.2.9.1-1: General test parameters for E-UTRAN TDD to GSM handover test case; unknown target cell

Para	meter	Unit	Value	Comment
PDSCH paramete	ers		DL Reference Measurement	As specified in clause A.3.1.1.2
			Channel R.0 TDD	
PCFICH/PDCCH	/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.2
parameters			Channel R.6 TDD	
Gap Pattern Id			None	No measurement gaps shall be provided.
Initial conditions Active cell			Cell 1	
	Neighbour cell		Cell 2	
Final conditions	Active cell		Cell 2	
DRX			OFF	No DRX configured
Special subframe	Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211
Uplink-downlink configuration			1	As specified in table 4.2-2 in TS 36.211
T1		S	7	
T2		S	1	

Table A.5.2.9.1 - 2: Cell specific parameters for cell # 1 in E-UTRAN TDD to GSM handover test case; unknown target cell

Parameter	Unit	Cell 1					
		T1	T2				
BW _{channel}	MHz		10				
OCNG Patterns							
defined in A.3.2.2.1							
(OP.1 TDD) and in		OP.1 TDD	OP.2 TDD				
A.3.2.2.2 (OP.2							
TDD)							
PBCH_RA	dB						
PBCH_ RB	dB						
PSS_ RA	dB						
SSS_RA	dB						
PCFICH_ RB	dB						
PHICH_ RA	dB						
PHICH_ RB	dB		0				
PDCCH_ RA	dB						
PDCCH_ RB	dB						
PDSCH_ RA	dB						
PDSCH_RB	dB						
OCNG_RA Note1	dB						
OCNG_ RB Note1	dB						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4					
$N_{oc}^{ m Note~2}$	dBm/15 kHz		-98				
\hat{E}_s/N_{oc}	dB		4				
RSRP Note 3	dBm/15 kHz		-94				
Propagation		AWGN					
Condition		A	wwGN				
		hat cell 1 is fully allocate					
		density is achieved for al					
		s and noise sources not					
		er subcarriers and time a	and shall be modelled as				
AMCN of	annranriata nawa	er for N_{oc} to be fulfilled.					
Note 3: RSRP leve	appropriate powe	rived from other paramet	ers for information				
purposes. They are not settable parameters themselves.							

Table A.5.2.9.1 - 3: Cell specific parameters for cell # 2 in E-UTRAN TDD to GSM handover test case; unknown target cell

Parameter	Unit	Cell 2 (GSM)		
Farameter	Onit	T1	T2	
Absolute RF Channel Number		AR	FCN 1	
RXLEV	dBm	-Infinity	-75	

A.5.2.9.2 Test Requirements

The UE shall begin to send access bursts on the new DCCH of the target cell less than 200 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The test requirement in this test case is expressed as:

 $T_{Handover delay}$ = 190 ms (Table 5.3.3.2.1-1) + T_{offset} + T_{UL}

 T_{offset} : Equal to 4.65 ms is the GSM timing uncertainty from the time when the UE is ready to transmit until the start of the next timeslot in GSM 26 multiframe structure

T_{III}: Equal to 4.65 ms is the time the UE has to wait in case the next timeslot is an idle frame or a SACCH frame.

This gives a total of 199.3 ms, allow 200 ms in the test case.

A.5.2.10 E-UTRAN TDD to UTRAN TDD handover: unknown target cell

A.5.2.10.1 Test Purpose and Environment

This test is to verify the requirement for E-UTRAN TDD to UTRAN TDD handover requirements specified in clause 5.3.2 when the target UTRAN TDD cell is unknown.

The test scenario comprises of 1 E-UTRAN TDD cell and 1 UTRAN TDD cell as given in tables A.5.2.10.1-1, A.5.2.10.1-2, and A.5.2.10.1-3. No gap pattern is configured in the test case.

The test consists of two successive time periods, with time durations of T1 and T2 respectively. During time duration T1, a RRC message implying handover to UTRA 1.28Mcps TDD cell shall be sent to the UE. The end of the last TTI containing handover message is the beginning of T2 duration.

Table A.5.2.10.1-1: General test parameters for E-UTRAN TDD to unknown UTRAN TDD cell handover test case

Parar	meter	Unit	Value	Comment
PDSCH param	neters		DL Reference Measurement Channel	As specified in clause A.3.1.1.2
			R.0 TDD	
PCFICH/PDCCH/PHICH			DL Reference	As specified in clause A.3.1.2.2
parameters			Measurement Channel	
			R.6 TDD	
Initial	Active cell		Cell 1	E-UTRAN TDD cell
conditions	Neighbour cell		Cell 2	UTRA 1.28Mcps TDD cell
Final conditions	7.0		Cell 2	UTRA 1.28Mcps TDD cell
CP length of ce	ell 1		Normal	
	Uplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subfrai			6	As specified in table 4.2.1 in TS 36.211
configuration o			O	7.3 Specified III table 4.2.1 III 10 30.211
Time offset bet	tween cells		3 ms	Asynchronous cells
Access Barring	g Information		Not Sent	No additional delays in random access
				procedure.
Assigned Sub-	-Channel		1	No additional delays in random access
Number				procedure due to ASC.
TimeToTrigger	TimeToTrigger		0	
Filter coefficient			0	L3 filtering is not used
DRX	DRX		OFF	
T1		S	5	During T1, cell 2 shall be powered off, and during the off time the physical layer cell identity shall be changed.
T2		S	1	

Table A.5.2.10.1-2: Cell specific test parameters for E-UTRAN TDD to unknown UTRAN TDD cell handover test case (cell 1)

Parameter	Unit	Cell 1	
		T1	T2
E-UTRA RF Channel			1
Number			
BWchannel	MHz	1	10
OCNG Patterns defined in		OP.1 TDD	OP.2 TDD
TS36.133 A.3.2.2.1 (OP.1			
TDD) and in A.3.2.2.2			
(OP.2 TDD)	40		
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB	4	
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB	0	0
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RANote 1	dB		
OCNG_RBNote 1	dB		_
\hat{E}_s/I_{ot}	dB	3	3
\hat{E}_s/N_{oc}	dB	3	3
N_{oc}	dBm/15kHz	-98	
RSRP	dBm/15kHz	-95	-95
SCH_RP	dBm/15 kHz	-95	-95
Propagation Condition			/GN
Note 1: OCNG shall be us	sed such that cell is	s fully allocated	l and a

Note 1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable

parameters themselves.

Table A.5.2.10.1-3: Cell specific test parameters for E-UTRAN TDD to unknown UTRAN TDD cell test case (cell 2)

Unit	Cell 2 (UTRA)			
	0 DwPT		PTS	
	T1	T2	T1	T2
		Chan	nel 2	
dB	-(3		
dB			0	
dB	-(3		
dB	-infinity	13	-infinity	13
dBm/1.28 MHz	-80			
dBm	-infinity	-infinity -70 n.a.		a.
	AWGN			
	dB dB dB dB dB dBm/1.28 MHz	dB -: dB -: dB -: dB -: dB -: finfinity dBm/1.28 MHz dBminfinity	0 T1 T2 Chan dB -3 dB -3 dB -infinity 13 dBm/1.28 MHz -8 dBm -infinity -70 AW AW	O DWF T1 T2 T1 T2 T1 T2 T1 T2 T1 T3 T4 T5 T5 T5 T5 T5 T5 T5

Note1: In the case of multi-frequency cell, the UTRA RF Channel Number is the

primary frequency's channel number.

Note2: P-CCPCH RSCP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.5.2.10.2 Test Requirements

The UE shall start to transmit the SYNCH-UL sequence in the UpPTS to Cell 2 less than 280 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + Tinterrupt, where:

RRC procedure delay = 50 ms, which is specified in clause 5.3.2.2.1.

 $T_{interrupt}$ is defined in clause 5.3.2.2.2. $T_{interrupt} = 230$ ms in the test as following:

 $T_{offset} = 10 \text{ ms}$; $T_{UL} = 10 \text{ ms}$; and $F_{SFN} = 1 \text{ for UE decoding SFN}$.

This gives a total of 280 ms.

A.5.2.10A E-UTRAN FDD – UTRAN FDD Multicarrier Handover with two target cells

A.5.2.10A.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to UTRAN FDD handover requirements specified in clause 5.3.1 in a 2 cell multicarrier configuration. It is applicable to UEs that support DC-HSDPA, DB-DC-HSDPA and which do not support 3C-HSDPA or 4C-HSDPA.

The test parameters are given in Tables A.5.2.10A.1-1, A.5.2.10A.1-2 and A.5.2.10A.1-3. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, Cell 2 and cell 3 become detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-RAT frequency monitoring.

A RRC message implying handover to cell 2 and cell 3 shall be sent to the UE during period T2, after the UE has reported Event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target Primary Serving HS-DSCH cell and cell 3 as the target Secondary Serving HS-DSCH cell.

Table A.5.2.10A.1-1: General test parameters for E-UTRAN FDD to UTRAN FDD handover test case

Parameter		Unit	Value	Comment
PDSCH parameters	}		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PI	HICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
	Active cell		Cell 1	E-UTRAN cell
	Neighbouring cell		Cell 2	UTRAN cell
	Active cell		Cell 2 and cell 3	UTRAN cell
Channel Bandwidth	(BW _{channel})	MHz	10	
Gap Pattern Id			0	As specified in Table 8.1.2.1-1 started before T2 starts
E-UTRAN FDD mea	asurement quantity		RSRP	
quantity	FDD) measurement		CPICH Ec/lo	
b2-Threshold1		dBm	-90	Absolute E-UTRAN RSRP threshold for event B2
b2-Threshold2-UTRA		dB	-18	Absolute UTRAN CPICH Ec/Io threshold for event B2
Hysteresis		dB	0	
TimeToTrigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	Non-DRX test
Access Barring Info	rmation	-	Not sent	No additional delays in random access procedure
E-UTRA RF Channe	el Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel B (BWchannel)		MHz	10	
UTRA RF Channel	Number		1	One UTRA FDD carrier frequency is used.
Monitored UTRA FD			12	UTRA cells on UTRA RF channel 1 provided in the cell before T2.
Post-verification per	riod		False	
T1		S	5	
T2		S	≤5	
T3		S	1	

Table A.5.2.10A.1-2: Cell specific test parameters for E-UTRAN FDD to UTRAN FDD handover test case (cell 1)

Parameter	Unit	Cell 1 (E-UTRA)		
		T1	T2	Т3
E-UTRA RF Channel			1	
number				
BW _{channel}	MHz		10	
OCNG Patterns		OP.1	OP.1	OP.2
defined in A.3.2.1.1		FDD	FDD	FDD
(OP.1 FDD) and in				
A.3.2.1.2 (OP.2 FDD)				
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB		0	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
\hat{E}_s/I_{ot}	dB	0	0	0
N_{oc}	dBm/15 kHz		-98	
\hat{E}_s/N_{oc}	dB	0	0	0
RSRP Note 2	dBm/15 KHz	-98	-98	-98
lo Note 2	dBm/9 MHz	-67.21	-67.21	-67.21
Propagation Condition			AWGN	

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.5.2.10A.1-3: Cell specific test parameters for E-UTRAN FDD to UTRAN FDD multi carrier handover test case (cell 2 and cell 3)

			Cell 2			Cell 3	
		T1	T2	T3	T1	T2	Т3
UTRA RF Channel Number			Channel 1			Channel 2	
Cell type		Primar	y Serving H Cell	S-DSCH	Secondary Serving HS-DSCH Cell		
CPICH_Ec/lor	dB		-10			-10	
PCCPCH_Ec/lor	dB		-12		-12		
SCH_Ec/lor	dB	-12		-12			
PICH_Ec/lor	dB		-15		-15		
HS-SCCH_Ec/lor	dB		-13		-13		
HS_DPDCH_Ec/lor	dB		-10		-10		
DPCH_Ec/lor	dB		Note 1		N/A		
OCNS			Note 2		-2.02		
\hat{I}_{or}/I_{oc}	dB	-Inf	-1.8	-1.8	-Inf	-1.8	-1.8
I_{oc}	dBm/3.8 MHz	4		•	-70		•
Propagation Condition		•	AWGN	•		AWGN	

Note 1: The DPCH level is controlled by the power control loop

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{\rm or}$ Note 3: The UE shall be scheduled continuously with HS-DSCH data during T3 using both cell 2 and cell 3

A.5.2.10A.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 210 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay $+ T_{interrupt}$, where:

RRC procedure delay = 50 ms, which is specified in clause 5.3.1.1.1.

 $T_{interrupt} = 160$ ms in the test; $T_{interrupt}$ is defined in clause 5.3.1.1.2.

This gives a total of 210 ms.

A.5.2.10B E-UTRAN TDD – UTRAN FDD Multicarrier Handover with two target cells

A.5.2.10B.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN TDD to UTRAN FDD handover requirements specified in clause 5.3.1 in a 2 cell multicarrier configuration. It is applicable to UEs that support DC-HSDPA, DB-DC-HSDPA and which do not support 3C-HSDPA or 4C-HSDPA.

The test parameters are given in Tables A.5.2.10B.1-1, A.5.2.10B.1-2 and A.5.2.10B.1-3. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, Cell 2 and cell 3 become detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-RAT frequency monitoring.

A RRC message implying handover to cell 2 and cell 3 shall be sent to the UE during period T2, after the UE has reported Event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target Primary Serving HS-DSCH cell and cell 3 as the target Secondary Serving HS-DSCH cell.

Table A.5.2.10B.1-1: General test parameters for E-UTRAN TDD to UTRAN FDD handover test case

Parameter		Unit	Value	Comment		
PDSCH parameters	(E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2		
PCFICH/PDCCH/PF (E-UTRAN TDD)	HICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2		
Initial conditions			Cell 1	Cell 1 is on E-UTRA RF channel number 1.		
N	Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.		
Final conditions A	Active cell		Cell 2 and cell 3			
Special subframe co	onfiguration		6	As specified in table 4.2-1 in TS 36.211. Applicable to cell 1.		
Uplink-downlink con	ifiguration		1	As specified in table 4.2-2 in TS 36.211. Applicable to cell 1		
E-UTRAN TDD mea			RSRP			
quantity	Inter-RAT (UTRA FDD) measurement		CPICH Ec/Io			
b2-Threshold1		dBm	-90	Absolute E-UTRAN RSRP threshold for event B2		
b2-Threshold2-UTRA		dB	-18	UTRAN FDD CPICH Ec/lo threshold for event B2		
Hysteresis		dB	0			
DRX			OFF	No DRX configured.		
Time to Trigger		ms	0			
Filter coefficient			0			
CP length			Normal	Applicable to cell 1		
Gap pattern configuration Id			0	As specified in Table 8.1.2.1-1; to start before T2 starts		
E-UTRA RF Channe	el Number		1	One E-UTRA TDD carrier frequency is used.		
E-UTRA Channel Ba (BW _{channel})		MHz	10			
UTRA RF Channel N	Number		1	One UTRA FDD carrier frequency is used.		
Monitored UTRA FD	DD cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell list before T2.		
Post-verification per	riod		False	Post verification is not used.		
T1		S	5			
T2		S	≤5			
T3		S	1			

Table A.5.2.10B.1-2: Cell specific test parameters for E-UTRAN TDD to UTRAN FDD handover test case (cell 1)

Parameter	Unit		Cell 1 (E-UTRAN)	
		T1	T2	T3
E-UTRA RF Channel			1	
Number				
BW _{channel}	MHz		10	
OCNG Pattern defined				
in A.3.2.2.1 (OP.1 TDD)		∩ P 1	TDD	OP.2 TDD
and in A.3.2.2.2 (OP.2		01.1	100	01.2 100
TDD)				
PBCH_RA				
PBCH_RB				
PSS_RA				
SSS_RA				
PCFICH_RB				
PHICH_RA				
PHICH_RB	dB		0	
PDCCH_RA				
PDCCH_RB				
PDSCH_RA				
PDSCH_RB				
OCNG_RA ^{Note 1}				
OCNG_RB ^{Note 1}				
RSRP	dBm/15 kHz	-98	-98	-98
\hat{E}_{s}/I_{ot}	dB	0	0	0
$\mathbf{L}_{\mathrm{s}}/1_{\mathrm{ot}}$				
^ /	dB	0	0	0
\hat{E}_s/N_{oc}	иь	U	0	U
N_{oc}	dBm/15 kHz		-98	
lo Note 2	dBm/9 MHz	-67.21	-67.21	-67.21
Propagation Condition			AWGN	

Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.5.2.10B.1-3: Cell specific test parameters for E-UTRAN TDD to UTRAN FDD multi carrier handover test case (cell 2 and cell 3)

		Cell 2		Cell 3			
		T1	T2	Т3	T1	T2	T3
UTRA RF Channel Number			Channel 1			Channel 2	
Cell type		Primar	rimary Serving HS-DSCH Secondary Serving H Cell Secondary Serving H		ary Serving HS Cell	S-DSCH	
CPICH_Ec/lor	dB		-10			-10	
PCCPCH_Ec/lor	dB		-12			-12	
SCH_Ec/lor	dB	-12		-12			
PICH_Ec/lor	dB	-15		-15			
HS-SCCH_Ec/lor	dB		-13		-13		
HS_DPDCH_Ec/lor	dB		-10		-10		
DPCH_Ec/lor	dB		Note 1		N/A		
OCNS			Note 2		-2.02		
\hat{I}_{or}/I_{oc}	dB	-Inf	-1.8	-1.8	-Inf	-1.8	-1.8
I_{oc}	dBm/3.8 MHz	4			-70		
Propagation Condition		AWGN AWGN					

Note 1: The DPCH level is controlled by the power control loop

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{\rm or}$ Note 3: The UE shall be scheduled continuously with HS-DSCH data during T3 using both cell 2 and cell 3

A.5.2.10B.2 Test Requirements

The UE shall start to transmit the UL DPCCH to Cell 2 less than 210 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay $+ T_{interrupt}$, where:

RRC procedure delay = 50 ms, which is specified in clause 5.3.1.1.1.

 $T_{interrupt} = 160$ ms in the test; $T_{interrupt}$ is defined in clause 5.3.1.1.2.

This gives a total of 210 ms.

A.5.2.11 E-UTRAN FDD – UTRAN FDD Handover for 5MHz Bandwidth

A.5.2.11.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.5.2.1.1.

The parameters of this test are the same as defined in Subclause A.5.2.1.1 except that the values of the parameters in the Table A.5.2.11.1-1 will replace the values of the corresponding parameters in A.5.2.1.1-1, and the values of the parameters in the Table A.5.2.1.1-2 will replace the values of the corresponding parameters in A.5.2.1.1-2.

Table A.5.2.11.1-1: General test parameters for E-UTRAN FDD to UTRAN FDD handover test case for 5MHz bandwidth

Parameter	Unit	Value	Comment	
PDSCH parameters		DL Reference Measurement	As specified in clause A.3.1.1.1	
		Channel R.5 FDD		
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.1	
		Channel R.11 FDD		
E-UTRA Channel Bandwidth	MHz	5		
(BWchannel)				
Note 1: See Table A.5.2.1.1-1 for other general test parameters.				
Note 2: This test is according to the pr	inciple d	efined in section A.3.7.2.		

Table A.5.2.11.1-2: Cell specific test parameters for E-UTRAN FDD to UTRAN FDD handover test case (cell 1)

Pa	rameter	Unit		Cell 1 (E-UTRA)				
			T1 T2		Т3			
BW _{channel}		MHz		5				
OCNG P	atterns		OP.15	OP.15	OP.16			
defined in	n A.3.2.1.15		FDD	FDD	FDD			
(OP.15 F	DD) and in							
A.3.2.1.1	6 (OP.16							
FDD)	•							
lo Note 2		dBm/4.5 MHz	-70.22	-70.22	-70.22			
Note 1:	OCNG shall b	e used such that b	ooth cells a	re fully alloc	ated and a			
	constant total	transmitted power	spectral d	ensity is ach	ieved for all			
	OFDM symbo	ymbols.						
Note 2:	RSRP and lo	d lo levels have been derived from other parameters for						
		on purposes. They are not settable parameters themselves.						
Note 3:	See Table A.5	.2.1.1-2 for other	cell specifi	c test param	eters.			

A.5.2.11.2 Test Requirements

The test requirements defined in section A.5.2.1.2 shall apply to this test case.

A.5.3 E-UTRAN Handover to Non-3GPP RATs

A.5.3.1 E-UTRAN FDD – HRPD Handover

A.5.3.1.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to HRPD handover requirements specified in clause 5.4.1.

The test parameters are given in Tables A.5.3.1.1-1, A.5.3.1.1-2 and A.5.3.1.1-3. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, Cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-RAT frequency monitoring.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Table A.5.3.1.1-1: General test parameters for E-UTRAN FDD to HRPD handover test case

Parameter		Unit	Value	Comment
PDSCH parameters			Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH parameters			DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Initial conditions	Active cell		Cell 1	E-UTRAN FDD cell
	Neighbouring cell		Cell 2	HRPD cell
Final condition	Active cell		Cell 2	HRPD cell
Channel Bandwidth	(BW _{channel})	MHz	10	
Gap Pattern Id			0	As specified in Table 8.1.2.1-1 started before T2 starts
E-UTRAN FDD me	asurement quantity		RSRP	
Inter-RAT (HRPD)			CDMA2000 HRPD Pilot	
quantity			Strength	
b2-Threshold1		dBm	-90	Absolute E-UTRAN RSRP threshold for event B2
b2-Threshold2-CDMA2000		dB	-7	Absolute 'CDMA2000 HRPD Pilot Strength' threshold for event B2
Hysteresis		dB	0	
TimeToTrigger			0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	Non-DRX test
Access Barring Info	ormation	-	Not sent	No additional delays in random access procedure
E-UTRA RF Chann	el Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel B (BWchannel)	Bandwidth	MHz	10	
HRPD RF Channel	Number		1	One HRPD carrier frequency is used.
HRPD neighbour ce	ell list size		8	HRPD cells on HRPD RF channel 1 provided in the cell list before T2.
cdma2000-SearchV	VindowSize		8 (60 PN chips)	Search window size as defined in clause 6.3.5 in TS 36.331
T1		S	5	
T2		S	≤10	
T3		S	1	
			•	

Table A.5.3.1.1-2: Cell specific test parameters for E-UTRAN FDD cell#1 for handover to HRPD cell # 2

Parameter	Unit	Cell 1 (E-UTRA)		A)	
		T1	T1 T2		
E-UTRA RF Channel		1			
number					
BW _{channel}	MHz		10		
OCNG Patterns defined in		OP.1	FDD	OP.2	
A.3.2.1.1 (OP.1 FDD) and				FDD	
in A.3.2.1.2 (OP.2 FDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB		0		
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$N_{oc}^{ m Note~2}$	dBm/15		-98		
	kHz				
RSRP Note 3	dBm/15	-98	-98	-98	
	KHz				
\hat{E}_s/N_{oc}	dB	0 0 0		0	
\hat{E}_s/I_{ot}	dB	0 0 0		0	
Propagation Condition		AWGN			

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.5.3.1.1-3: Cell specific test parameters for HRPD (cell # 2) for handover from E-UTRAN FDD cell (cell #1)

Parameter	Unit		Cell 2 (HRPD)	
		T1	T2	Т3
$\frac{\text{Control} \text{E}_{\text{b}}}{\text{N}_{\text{t}}} \text{(38.4 kbps)}$	dB 21			
$\frac{\text{Control} \text{E}_{\text{b}}}{\text{N}_{\text{t}}} \text{ (76.8 kbps)}$	dB		18	
\hat{I}_{or}/I_{oc}	dB	-infinity	0	0
I_{oc}	dBm/1.2288 MHz		-55	
CDMA2000 HRPD Pilot Strength	dB	-infinity	-3	-3
Propagation Condition			AWGN	

A.5.3.1.2 Test Requirements

The UE shall start transmission of the reverse control channel in HRPD to Cell 2 less than 127 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 50 ms, which is specified in clause 5.4.1.1.1.

 $T_{interrupt} = 76.66$ ms in the test; $T_{interrupt}$ is defined in clause 5.4.1.1.2.

This gives a total of 126.66 ms, allow 127 ms in the test.

A.5.3.2 E-UTRAN FDD – cdma2000 1X Handover

A.5.3.2.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to cdma2000 1X handover requirements specified in clause 5.4.2.

The test parameters are given in Tables A.5.3.2.1-1, A.5.3.2.1-2 and A.5.3.2.1-3. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, Cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-RAT frequency monitoring.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Table A.5.3.2.1-1: General test parameters for E-UTRAN FDD to cdma2000 1X handover test case

Parameter		Jnit	Value	Comment
PDSCH parameters			Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH parameters			DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Initial conditions Active	cell		Cell 1	E-UTRAN FDD cell
Neighb	ouring cell		Cell 2	cdma2000 1X cell
Final condition Active			Cell 2	cdma2000 1X cell
Channel Bandwidth (BW _{cha}	annel) IV	1Hz	10	
Gap Pattern Id			0	As specified in Table 8.1.2.1-1 started before T2 starts
E-UTRAN FDD measurem	ent quantity		RSRP	
Inter-RAT (cdma2000 1X)			CDMA2000 1xRTT Pilot	
quantity			Strength	
b2-Threshold1	d	Bm	-90	Absolute E-UTRAN RSRP threshold for event B2
b2-Threshold2-CDMA2000) (dB	-14	Absolute 'CDMA2000 1xRTT Pilot Strength' threshold for event B2
Hysteresis		dB	0	
TimeToTrigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX			OFF	Non-DRX test
Access Barring Information	1	-	Not sent	No additional delays in random access procedure
E-UTRA RF Channel Num	ber		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwid (BWchannel)	th N	ИHz	10	
cdma2000 1X RF Channel	Number		1	One HRPD carrier frequency is used.
cdma2000 1X neighbour co	ell list size		8	cdma2000 1X cells on cdma2000 1X RF channel 1 provided in the cell list before T2.
cdma2000-SearchWindow	Size		8 (60 PN chips)	Search window size as defined in clause 6.3.5 in TS 36.331
T1		S	5	
T2		S	≤10	
T3		3	≥10	

Table A.5.3.2.1-2: Cell specific test parameters for E-UTRAN FDD cell#1 for handover to cdma2000 1X cell #2

Parameter	Unit	Co	ell 1 (E-UTR	A)	
		T1	T2	T3	
E-UTRA RF Channel			1		
number					
BW _{channel}	MHz		10		
OCNG Patterns defined in		OP.1	FDD	OP.2	
A.3.2.1.1 (OP.1 FDD) and				FDD	
in A.3.2.1.2 (OP.2 FDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
Note 2	dBm/15		-98		
	kHz			T	
RSRP Note 3	dBm/15	-98	-98	-98	
	KHz				
\hat{E}_s/N_{oc}	dB	0	0	0	
\hat{E}_s/I_{ot}	dB	0	0	0	
Propagation Condition	AWGN			-	
Note 1: OCNG shall be us	ed such that	both cells are	fully allocate	ed and a	
constant total tran OFDM symbols.					
Note 2: Interference from	other cells an	d noise sour	ces not speci	fied in the	
test is assumed to					
			N		

be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 3:

Table A.5.3.2.1-3: Cell specific test parameters for cdma2000 1X (cell # 2) for handover from E-UTRAN FDD cell (cell #1)

Parameter	Unit	Cell	2 (cdma2000 1	(X)
		T1	T2	Т3
Pilot E _c	dB	-7		
Sync E _c	dB	-16		
$\frac{\text{Paging} \text{E}_{\text{c}}}{\text{I}_{\text{or}}} \text{(4.8 kbps)}$	dB	-12		
\hat{I}_{or}/I_{oc}	dB	-infinity 0		0
I_{oc}	dBm/1.2288 MHz	-55		
CDMA2000 1xRTT Pilot Strength	dB	-infinity	-10	-10
Propagation Condition		AWGN		

A.5.3.2.2 Test Requirements

The UE shall start transmission of the reverse control channel in cdma2000 1X to Cell 2 less than 300 ms from the beginning of time period T3.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 130 ms, which is specified in clause 5.4.2.1.1.

 $T_{interrupt} = 170$ ms in the test; $T_{interrupt}$ is defined in clause 5.4.2.1.2.

This gives a total of 300 ms.

A.5.3.3 E-UTRAN FDD – HRPD Handover; Unknown Target Cell

A.5.3.3.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to HRPD handover requirements for the case when the target HRPD cell is unknown as specified in clause 5.4.1.

The test parameters are given in Tables A.5.3.3.1-1, A.5.3.3.1-2 and A.5.3.3.1-3. The test consists of two successive time periods, with time durations of T1 and T2 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. During time period T1, message containing Information Element *systemTimeInfo* as defined in clause 6.3.1 of TS 36.331 [2] shall be sent by the System Simulator (SS). No gap patterns are configured in the test case. No HRPD neighbour cell list shall be provided to the UE.

A RRC message implying handover to the unknown HRPD cell shall be sent to the UE towards the end of the time period T1. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Table A.5.3.3.1-1: General test parameters for E-UTRAN FDD to HRPD handover test case; unknown target HRPD cell

Par	ameter	Unit	Value	Comment
PDSCH paramete	rs		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/F	PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Initial conditions	Active cell		Cell 1	E-UTRAN FDD cell
	Neighbouring cell		Cell 2	HRPD cell
Final condition	Active cell		Cell 2	HRPD cell
Channel Bandwidt	h (BW _{channel})	MHz	10	
DRX			OFF	Non-DRX test
Access Barring Inf	Access Barring Information		Not sent	No additional delays in random access procedure
E-UTRA RF Chan	nel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel (BWchannel)	Bandwidth	MHz	10	
HRPD RF Channel Number			1	One HRPD carrier frequency is used.
cdma2000-SearchWindowSize			8 (60 PN chips)	Search window size as defined in clause 6.3.5 in TS 36.331
T1		S	≤5	
T2		S	1	

Table A.5.3.3.1-2: Cell specific test parameters for E-UTRAN FDD cell#1 for handover to unknown HRPD cell # 2

Parameter	Unit	Cell 1 (E-UTRAN FDD)			
		T1	T2		
E-UTRA RF Channel		1	1		
number					
BW _{channel}	MHz	1	0		
OCNG Patterns defined in		OP.1	FDD		
A.3.2.1.1 (OP.1 FDD)	-ID				
PBCH_RA	dB		ļ		
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB)		
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA Note 1	dB				
OCNG_RB Note 1	dB				
$N_{oc}^{ m Note 2}$	dBm/15 kHz	-9	98		
RSRP Note 3	dBm/15 kHz	-98	-98		
\hat{E}_s/N_{oc}	dB	0 0			
\hat{E}_s/I_{ot}	dB	0 0			
Propagation Condition		AW	'GN		

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Table A.5.3.3.1-3: Cell specific test parameters for unknown HRPD (cell # 2) for handover from E-UTRAN FDD cell (cell #1)

Parameter	Unit	Cell 2 (HRPD)		
		T1	T2	
E_b (38.4		2	1	
N _t	dB			
kbps)				
Control E_b (76.8		18	3	
N_{t}	dB			
kbps)				
\hat{I}_{or}/I_{oc}	dB	-infinity	0	
I_{oc}	dBm/1.22	-5	5	
1 oc	88 MHz	3	9	
CDMA2000 HRPD Pilot Strength	dB	-infinity	-3	
Propagation Condition		AW	GN	

A.5.3.3.2 Test Requirements

The UE shall start transmission of the reverse control channel in HRPD to Cell 2 less than 127 ms from the beginning of time period T2.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay is expressed as: RRC procedure delay + T_{interrupt}, where:

T_{interrupt} also includes time to detect HRPD cell; see clause 5.4.1.1.2

This gives a total of 126.66 ms, allow 127 ms in the test case.

A.5.3.4 E-UTRAN FDD – cdma2000 1X Handover; Unknown Target cell

A.5.3.4.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN FDD to cdma2000 1X handover requirements for the case when the target cdma2000 1X cell is unknown as specified in clause 5.4.2.

The test parameters are given in Tables A.5.3.4.1-1, A.5.3.4.1-2 and A.5.3.4.1-3. The test consists of two successive time periods, with time durations of T1 and T2 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. During time period T1, message containing Information Element *systemTimeInfo* as defined in clause 6.3.1 of TS 36.331 [2] shall be sent by the System Simulator (SS). No gap patterns are configured in the test case. No cdma2000 1X neighbour cell list shall be provided to the UE.

A RRC message implying handover to the unknown cdma2000 1X cell shall be sent to the UE towards the end of the time period T1. The start of T2 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Table A.5.3.2.1-1: General test parameters for E-UTRAN FDD to cdma2000 1X handover test case; unknown target cdma2000 1X cell

Par	ameter	Unit	Value	Comment
PDSCH parameters			DL Reference Measurement	As specified in clause A.3.1.1.1
			Channel R.0 FDD	
PCFICH/PDCCH/F	PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.1
			Channel R.6 FDD	
Initial conditions	Active cell		Cell 1	E-UTRAN FDD cell
	Neighbouring cell		Cell 2	cdma2000 1X cell
Final condition	Active cell		Cell 2	cdma2000 1X cell
Channel Bandwidt	h (BW _{channel})	MHz	10	
DRX			OFF	Non-DRX test
Access Barring Inf	Access Barring Information		Not sent	No additional delays in random
				access procedure
E-UTRA RF Chan	nel Number		1	One E-UTRA FDD carrier
				frequency is used.
E-UTRA Channel	Bandwidth	MHz	10	
(BWchannel)				
cdma2000 1X RF	Channel Number		1	One HRPD carrier frequency is used.
cdma2000-Search	WindowSize		8 (60 PN chips)	Search window size as defined in clause 6.3.5 in TS 36.331
T1		S	≤5	
T2		S	1	

Table A.5.3.2.1-2: Cell specific test parameters for E-UTRAN FDD cell#1 for handover to unknown cdma2000 1X cell # 2

Parameter	Unit	Cell 1 (E-U	UTRAN FDD)	
	Ī	T1	T2	
E-UTRA RF Channel number			1	
BW _{channel}	MHz	1	0	
OCNG Patterns defined in		OP.1	FDD	
A.3.2.1.1 (OP.1 FDD)				
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	(0	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA Note 1	dB			
OCNG_RB Note 1	dB			
$N_{oc}^{ m Note 2}$	dBm/15 kHz	-98		
RSRP Note 3	dBm/15 kHz	-98	-98	
\hat{E}_s/N_{oc}	dB	0	0	
\hat{E}_s/I_{ot}	dB	0	0	
Propagation Condition		AW	GN	

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N

to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.5.3.2.1-3: Cell specific test parameters for unknown cdma2000 1X (cell # 2) for handover from E-UTRAN FDD cell (cell #1)

Parameter	Unit	Cell 2 (cdma2000 1X)		
		T1	T2	
Pilot E _c I _{or}	dB	-7		
Sync E _c	dB	-16		
$\frac{\text{Paging} \text{E}_{\text{c}}}{\text{I}_{\text{or}}} \text{(4.8 kbps)}$	dB	-12		
\hat{I}_{or}/I_{oc}	dB	-infinity	0	
I_{oc}	dBm/1.22 88 MHz	-55		
CDMA2000 1xRTT Pilot Strength	dB	-infinity	-10	
Propagation Condition		AWGN		

A.5.3.4.2 Test Requirements

The UE shall start transmission of the reverse control channel in cdma2000 1X to Cell 2 less than 300 ms from the beginning of time period T2.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay is expressed as: RRC procedure delay + T_{interrupt}, where:

T_{interrupt} also includes time to detect cdma2000 1X cell; see clause 5.4.2.1.2

This gives a total of 300 ms.

A.5.3.5 E-UTRAN TDD - HRPD Handover

A.5.3.5.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN TDD to HRPD handover requirements specified in clause 5.4.1.

The test parameters are given in Tables A.5.3.5.1-1, A.5.3.5.1-2 and A.5.3.5.1-3. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, Cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-RAT frequency monitoring.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Table A.5.3.5.1-1: General test parameters for E-UTRAN TDD to HRPD handover test case

Parame	ter	Unit	Value	Comment
PDSCH parameters			Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHIC	H parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Initial conditions Act	tive cell		Cell 1	E-UTRAN TDD cell
	ighbouring cell		Cell 2	HRPD cell
	tive cell		Cell 2	HRPD cell
Channel Bandwidth (B)	$N_{\sf channel})$	MHz	10	
Gap Pattern Id			0	As specified in Table 8.1.2.1-1 started before T2 starts
E-UTRAN TDD measu	rement quantity		RSRP	
Inter-RAT (HRPD) mea	asurement		CDMA2000 HRPD Pilot	
quantity			Strength	
b2-Threshold1		dBm	-90	Absolute E-UTRAN RSRP threshold for event B2
b2-Threshold2-CDMA2	2000	dB	-7	Absolute 'CDMA2000 HRPD Pilot Strength' threshold for event B2
Hysteresis		dB	0	
TimeToTrigger		S	0	
Filter coefficient			0	L3 filtering is not used
DRX	DRX		OFF	Non-DRX test
Access Barring Informa	ation	-	Not sent	No additional delays in random access procedure
E-UTRA RF Channel N	lumber		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Band (BWchannel)	lwidth	MHz	10	
Uplink-downlink configu	uration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe confi	guration of cell 1		6	As specified in table 4.2.1 in TS 36.211
HRPD RF Channel Nu	mber		1	One HRPD carrier frequency is used.
HRPD neighbour cell li			8	HRPD cells on HRPD RF channel 1 provided in the cell list before T2.
cdma2000-SearchWind	dowSize		8 (60 PN chips)	Search window size as defined in clause 6.3.5 in TS 36.331
T1		S	5	
T2		S	≤10	
T3		S	1	

Table A.5.3.5.1-2: Cell specific test parameters for E-UTRAN TDD cell#1 for handover to HRPD cell # 2

Parameter	Unit	Cell 1 (E-UTRA)		A)	
		T1	T2	Т3	
E-UTRA RF Channel			1		
number					
BW _{channel}	MHz	10			
OCNG Patterns defined in		OP.1 TDD OP			
TS36.133 A.3.2.2.1 (OP.1				TDD	
TDD) and in A.3.2.2.2					
(OP.2 TDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
N_{oc} Note 2	dBm/15		-98		
	kHz				
RSRP Note 3	dBm/15	-98	-98	-98	
	KHz				
\hat{E}_s/N_{oc}	dB	0	0	0	
\hat{E}_s/I_{ot}	dB	0	0	0	
Propagation Condition		AWGN			
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all					
OFDM symbols.	ismilieu powe	ı specilal del	isity is achie	veu ioi ali	
	Interference from other cells and noise sources not specified in the				
	test is assumed to be constant over subcarriers and time and shall				
be modelled as A	be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.				
Note 3: RSRP levels have	RSRP levels have been derived from other parameters for				

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.5.3.5.1-3: Cell specific test parameters for HRPD (cell # 2) for handover from E-UTRAN TDD cell (cell #1)

Parameter	Unit	Cell 2 (HRPD)		
		T1	T2	T3
$\frac{\text{Control} \text{E}_{\text{b}}}{\text{N}_{\text{t}}} \text{(38.4 kbps)}$	dB		21	
$\frac{\text{Control} \text{E}_{\text{b}}}{\text{N}_{\text{t}}} \text{ (76.8 kbps)}$	dB		18	
\hat{I}_{or}/I_{oc}	dB	-infinity	0	0
I_{oc}	dBm/1.2288 MHz	-55		
CDMA2000 HRPD Pilot Strength	dB	-infinity	-3	-3
Propagation Condition			AWGN	·

A.5.3.5.2 Test Requirements

The UE shall start transmission of the reverse control channel in HRPD to Cell 2 less than 127 ms from the beginning of time period T3.

The rate of correct handovers observed during repeated tests shall be at least 90%.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 50 ms, which is specified in clause 5.4.1.1.1.

 $T_{interrupt} = 76.66 \text{ ms in the test; } T_{interrupt} \text{ is defined in clause 5.4.1.1.2.}$

This gives a total of 126.66 ms, allow 127 ms in the test.

A.5.3.6 E-UTRAN TDD – cdma2000 1X Handover

A.5.3.6.1 Test Purpose and Environment

This test is to verify the requirement for the E-UTRAN TDD to cdma2000 1X handover requirements specified in clause 5.4.2.

The test parameters are given in Tables A.5.3.6.1-1, A.5.3.6.1-2 and A.5.3.6.1-3. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of Cell 2. Starting T2, Cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-RAT frequency monitoring.

A RRC message implying handover shall be sent to the UE during period T2, after the UE has reported Event B2. The start of T3 is the instant when the last TTI containing the RRC message implying handover is sent to the UE. The handover message shall contain cell 2 as the target cell.

Table A.5.3.6.1-1: General test parameters for E-UTRAN TDD to cdma2000 1X handover test case

Parameter	Unit	Value	Comment
PDSCH parameters		Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Initial conditions		Cell 1	E-UTRAN TDD cell
Neighbouring cell		Cell 2	cdma2000 1X cell
Final condition		Cell 2	cdma2000 1X cell
Channel Bandwidth (BW _{channel})	MHz	10	
Gap Pattern Id		0	As specified in Table 8.1.2.1-1 started before T2 starts
E-UTRAN TDD measurement quantity		RSRP	
Inter-RAT (cdma2000 1X) measureme		CDMA2000 1xRTT Pilot	
quantity		Strength	
b2-Threshold1	dBm	-90	Absolute E-UTRAN RSRP threshold for event B2
b2-Threshold2-CDMA2000	dB	-14	Absolute 'CDMA2000 1xRTT Pilot Strength' threshold for event B2
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	Non-DRX test
Access Barring Information	-	Not sent	No additional delays in random access procedure
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BWchannel)	MHz	10	
cdma2000 1X RF Channel Number		1	One cdma2000 1X carrier frequency is used.
cdma2000 1X neighbour cell list size		8	cdma2000 1X cells on cdma2000 1X RF channel 1 provided in the cell list before T2.
cdma2000-SearchWindowSize		8 (60 PN chips)	Search window size as defined in clause 6.3.5 in TS 36.331
T1	S	5	
T2	S	≤10	
T3	S	1	

Table A.5.3.6.1-2: Cell specific test parameters for E-UTRAN TDD cell#1 for handover to cdma2000 1X cell # 2

Parameter	Unit	Cell 1 (E-UTRA)						
		T1	T2	Т3				
E-UTRA RF Channel			1					
number								
BW _{channel}	MHz		10					
OCNG Patterns defined in		OP.1	TDD	OP.2				
A.3.2.2.1 (OP.1 TDD) and				TDD				
in A.3.2.2.2 (OP.2 TDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB							
PHICH_RB	dB		0					
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RANote 1	dB							
OCNG_RB ^{Note 1}	dB							
Noc Note 2	dBm/15	-98						
	kHz							
RSRP Note 3	dBm/15	-98	-98	-98				
	KHz							
\hat{E}_s/N_{oc}	dB	0	0	0				
\hat{E}_s/I_{ot}	dB	0	0	0				
Propagation Condition			AWGN					
Note 1: OCNG shall be us	ed such that	both cells are	fully allocate	ed and a				
	constant total transmitted power spectral density is achieved for all							
Note 2: Interference from								
test is assumed to	test is assumed to be constant over subcarriers and time and shall							
	N							
be modelled as Al	be modelled as AWGN of appropriate power for $^{N_{oc}}$ to be fulfilled							
Note 3: RSRP levels have been derived from other parameters for								
information purpos	information purposes. They are not settable parameters themselves.							

Table A.5.3.6.1-3: Cell specific test parameters for cdma2000 1X (cell # 2) for handover from E-UTRAN TDD cell (cell #1)

Parameter	Unit	Cell 2 (cdma2000 1X)			
		T1		T3	
Pilot E _c I _{or}	dB	-7			
Sync E _c I _{or}	dB	-16			
$\frac{\text{Paging} \text{E}_{c}}{\text{I}_{\text{or}}} \text{(4.8 kbps)}$	dB	-12			
\hat{I}_{or}/I_{oc}	dB	-infinity 0			
I_{oc}	dBm/1.2288 MHz	-55			
CDMA2000 1xRTT Pilot Strength	dB	-infinity -10		-10	
Propagation Condition		AWGN			

A.5.3.6.2 Test Requirements

The UE shall start transmission of the reverse control channel in cdma2000 1X to Cell 2 less than 300 ms from the beginning of time period T3.

NOTE: The handover delay can be expressed as: RRC procedure delay + T_{interrupt}, where:

RRC procedure delay = 130 ms, which is specified in clause 5.4.2.1.1.

 $T_{interrupt} = 170$ ms in the test; $T_{interrupt}$ is defined in clause 5.4.2.1.2.

This gives a total of 300 ms.

A.6 RRC Connection Control

A.6.1 RRC Re-establishment

A.6.1.1 E-UTRAN FDD Intra-frequency RRC Re-establishment

A.6.1.1.1 Test Purpose and Environment

The purpose is to verify that the E-UTRA FDD intra-frequency RRC re-establishment delay is within the specified limits. These tests will verify the requirements in clause 6.1.2.

The test parameters are given in table A.6.1.1.1-1 and table A.6.1.1.1-2 below. The test consists of 3 successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time period T2, cell 1, which is the active cell, is deactivated. The time period T3 starts after the occurrence of the radio link failure.

Table A.6.1.1.1-1: General test parameters for E-UTRAN FDD intra-frequency RRC Re-establishment test case

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/F	PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chanr	nel Number		1	Only one FDD carrier frequency is used.
Channel Bandwidtl	h (BW _{channel})	MHz	10	
N310			1	Maximum consecutive out-of-sync indications from lower layers
N311	N311		1	Minimum consecutive in-sync indications from lower layers
T310		ms	0	Radio link failure timer; T310 is disabled
T311		ms	3000	RRC re-establishment timer
DRX			OFF	
CP length			Normal	
Access Barring Info	Access Barring Information		Not Sent	No additional delays in random access procedure.
PRACH configuration index			4	As specified in table 5.7.1-2 in TS 36.211
Time offset between cells		ms	3	Asynchronous cells
T1		S	5	
T2		ms	200	
T3		S	3	

Table A.6.1.1.1-2: Cell specific test parameters for E-UTRAN FDD intra-frequency RRC Reestablishment test case

Parameter	Unit	Cell 1		Cell 2			
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 FDD	OP.2 FDD	OP.1 FDD
defined in A.3.2.1.1		FDD	FDD	FDD			
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		0				
PDCCH_RA	dB		0			0	
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	1.54	-Infinity	-Infinity	-3.79	4	4
N_{oc} Note 2	dBm/15 KHz				-98	·	·
\hat{E}_s/N_{oc}	dB	7	-Infinity	-Infinity	4	4	4
RSRP Note 3	dBm/15 KHz	-91	-Infinity	-Infinity	-94	-94	-94
Propagation Condition		·	· · · · · · · · · · · · · · · · · · ·	·	AWGN		

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.6.1.1.2 Test Requirements

The RRC re-establishment delay is defined as the time from the start of time period T3, to the moment when the UE starts to send PRACH preambles to cell 2 for sending the RRCConnectionReestablishmentRequest message to cell 2.

The RRC re-establishment delay to a known E-UTRA FDD intra frequency cell shall be less than 1.5 s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in the test is derived from the following expression:

$$T_{re-establish delay} = T_{UL grant} + T_{UE re-establish delay}$$

Where:

$$T_{UE_re\text{-establish_delay}} = 50 \text{ ms} + N_{freq} * T_{search} + T_{SI} + T_{PRACH}$$

$$N_{freq} = 1$$

$$T_{\text{search}} = 100 \text{ ms}$$

 $T_{SI} = 1280$ ms; it is the time required for receiving all the relevant system information as defined in TS 36.331 for the target E-UTRAN FDD cell.

 $T_{PRACH} = 15$ ms; it is the additional delay caused by the random access procedure.

This gives a total of 1445 ms, allow 1.5 s in the test case.

A.6.1.2 E-UTRAN FDD Inter-frequency RRC Re-establishment

A.6.1.2.1 Test Purpose and Environment

The purpose is to verify that the E-UTRA FDD inter-frequency RRC re-establishment delay is within the specified limits. These tests will verify the requirements in clause 6.1.2.

The test parameters are given in table A.6.1.1.2-1 and table A.6.1.1.2-2 below. The test consists of 3 successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time period T2, cell 1, which is the active cell, is deactivated. The time period T3 starts after the occurrence of radio link failure. At the start of time period T3, cell 2, which is the neighbour cell, is activated.

Table A.6.1.2.1-1: General test parameters for E-UTRAN FDD inter-frequency RRC Re-establishment test case

Para	ameter	Unit	Value	Comment
PDSCH parameters	PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/P	HICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chann	el Number (cell 1)		1	
E-UTRA RF Chann	el Number (cell 2)		2	
E-UTRA FDD inter-	frequency carrier list		1	2 E-UTRA FDD carrier
size				frequencies in total: 1 intra-
				frequency and 1 inter-frequency
Channel Bandwidth	n (BW _{channel})	MHz	10	
N310	N310		1	Maximum consecutive out-of-sync
				indications from lower layers
N311		-	1	Minimum consecutive in-sync
				indications from lower layers
T310		ms	0	Radio link failure timer; T310 is disabled
T311		ms	5000	RRC re-establishment timer
DRX			OFF	
CP length			Normal	
Access Barring Info	ormation	-	Not Sent	No additional delays in random access procedure.
PRACH configurati	on index		4	As specified in table 5.7.1-2 in TS 36.211
Time offset betwee	n cells	ms	3	Asynchronous cells
T1		S	5	
T2		ms	200	
T3		S	5	

Table A.6.1.2.1-2: Cell specific test parameters for E-UTRAN FDD inter-frequency RRC Reestablishment test case

Parameter	Unit		Cell 1		Cell 2		
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel			1			2	
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 FDD	OP.2 FDD	OP.1 FDD
defined in A.3.2.1.1		FDD	FDD	FDD			
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		_			_	
PDCCH_RA	dB		0			0	
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	-Infinity	-Infinity	-Infinity	-Infinity	7
N_{oc} Note 2	dBm/15 KHz	-98					
\hat{E}_s/N_{oc}	dB	4	-Infinity	-Infinity	- Infinity	- Infinity	7
RSRP Note 3	dBm/15 KHz	-94 -Infinity -Infinity - Infinity -91					
Propagation Condition					AWGN		

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.6.1.2.2 Test Requirements

The RRC re-establishment delay is defined as the time from the start of time period T3, to the moment when the UE starts to send PRACH preambles to cell 2 for sending the *RRCConnectionReestablishmentRequest* message to cell 2.

The RRC re-establishment delay to an unknown E-UTRA FDD inter frequency cell shall be less than 3 s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in the test is derived from the following expression:

$$T_{re-establish delay} = T_{UL grant} + T_{UE re-establish delay}$$

Where:

$$T_{UE_re\text{-establish_delay}} = 50 \text{ ms} + N_{freq} * T_{search} + T_{SI} + T_{PRACH}$$

$$N_{\text{freq}} = 2$$

$$T_{\text{search}} = 800 \text{ ms}$$

 $T_{SI} = 1280$ ms; it is the time required for receiving all the relevant system information as defined in TS 36.331 for the target E-UTRAN FDD cell.

 T_{PRACH} = 15 ms; it is the additional delay caused by the random access procedure.

This gives a total of 2945 ms, allow 3 s in the test case.

A.6.1.3 E-UTRAN TDD Intra-frequency RRC Re-establishment

A.6.1.3.1 Test Purpose and Environment

The purpose is to verify that the E-UTRA TDD intra-frequency RRC re-establishment delay is within the specified limits. These tests will verify the requirements in clause 6.1.2.

The test parameters are given in table A.6.1.3.1-1 and table A.6.1.3.1-2 below. The test consists of 3 successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time period T2, cell 1, which is the active cell, is deactivated. The time period T3 starts after the occurrence of the radio link failure.

Table A.6.1.3.1-1: General test parameters for E-UTRAN TDD intra-frequency RRC Re-establishment test case

Pai	rameter	Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/	PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.2
	•		Channel R.6 TDD	·
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chan	inel Number		1	Only one TDD carrier frequency is used.
Channel Bandwid	th (BW _{channel})	MHz	10	
N310		-	1	Maximum consecutive out-of-sync indications from lower layers
N311		-	1	Minimum consecutive in-sync indications from lower layers
T310		ms	0	Radio link failure timer; T310 is disabled
T311		ms	3000	RRC re-establishment timer
DRX			OFF	
CP length			Normal	
Access Barring In	formation	-	Not Sent	No additional delays in random access procedure.
Special subframe	configuration		6	As specified in table 4.2-1 in TS 36.211
Uplink-downlink configuration			1	As specified in table 4.2-2 in TS 36.211
PRACH configuration index			53	As specified in table 5.7.1-3 in TS 36.211
Time offset betwe	en cells	μs	3	Synchronous cells
T1		s	5	-
T2		ms	200	
T3		S	3	

Table A.6.1.3.1-2: Cell specific test parameters for E-UTRAN TDD intra-frequency RRC Reestablishment test case

Parameter	Unit		Cell 1		Cell 2		
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel			1		1		
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 TDD	OP.2 TDD	OP.1 TDD
defined in A.3.2.2.1		TDD	TDD	TDD			
(OP.1 TDD) and in							
A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		•			•	
PDCCH_RA	dB		0			0	
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	1.54	-Infinity	-Infinity	-3.79	4	4
$N_{oc}^{\text{Note 2}}$	dBm/15 KHz				-98	<u>.</u>	
\hat{E}_s/N_{oc}	dB	7	-Infinity	-Infinity	4	4	4
RSRP Note 3	dBm/15 KHz	-91 -Infinity -Infinity -94 -94 -94					-94
Propagation Condition					AWGN	*** 1	

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.6.1.3.2 Test Requirements

The RRC re-establishment delay is defined as the time from the start of time period T3, to the moment when the UE starts to send PRACH preambles to cell 2 for sending the RRCConnectionReestablishmentRequest message to cell 2.

The RRC re-establishment delay to a known E-UTRA TDD intra frequency cell shall be less than 1.5 s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in the test is derived from the following expression:

$$T_{re-establish delay} = T_{UL grant} + T_{UE re-establish delay}$$

Where:

$$T_{UE_re\text{-establish_delay}} = 50 \text{ ms} + N_{freq} * T_{search} + T_{SI} + T_{PRACH}$$

$$N_{freq} = 1$$

$$T_{\text{search}} = 100 \text{ ms}$$

 T_{SI} = 1280 ms; it is the time required for receiving all the relevant system information as defined in TS 36.331 for the target E-UTRAN TDD cell.

 $T_{PRACH} = 15$ ms; it is the additional delay caused by the random access procedure.

This gives a total of 1445 ms, allow 1.5 s in the test case.

A.6.1.4 E-UTRAN TDD Inter-frequency RRC Re-establishment

A.6.1.4.1 Test Purpose and Environment

The purpose is to verify that the E-UTRA TDD inter-frequency RRC re-establishment delay is within the specified limits. These tests will verify the requirements in clause 6.1.2.

The test parameters are given in table A.6.1.4.1-1 and table A.6.1.4.1-2 below. The test consists of 3 successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time period T2, cell 1, which is the active cell, is deactivated. The time period T3 starts after the occurrence of radio link failure. At the start of time period T3, cell 2, which is the neighbour cell, is activated.

Table A.6.1.4.1-1: General test parameters for E-UTRAN TDD inter-frequency RRC Re-establishment test case

Para	meter	Unit	Value	Comment
PDSCH parameters			DL Reference Measurement	As specified in clause A.3.1.1.2
·			Channel R.0 TDD	
PCFICH/PDCCH/PI	HICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.2
	'		Channel R.6 TDD	•
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
	Active cell		Cell 2	
E-UTRA RF Channe			1	
E-UTRA RF Channe	` /			
	frequency carrier list		2	2 E-UTRA TDD carrier
size			·	frequencies in total: 1 intra-
0.20				frequency and 1 inter-frequency
Channel Bandwidth	(BW _{channel})	MHz	10	inequency and i interinequency
N310	(DVV channel)	-	1	Maximum consecutive out-of-sync
14010				indications from lower layers
N311			1	Minimum consecutive in-sync
11311			'	indications from lower layers
T310		ms	0	Radio link failure timer; T310 is
1310		1113	o o	disabled
T311		ms	5000	RRC re-establishment timer
DRX		1113	OFF	TATO TE-ESTABIISTITIETT TITLET
CP length			Normal	
Access Barring Info	rmation		Not Sent	No additional delays in random
			Not Sent	access procedure.
Special subframe co	onfiguration		6	As specified in table 4.2-1 in TS 36.211
Uplink-downlink configuration			1	As specified in table 4.2-2 in TS 36.211
PRACH configuration	on index		53	As specified in table 5.7.1-3 in TS 36.211
Time offset between	n cells	μs	3	Synchronous cells
T1		β S	5	- ,
T2		ms	200	
T3		S	5	

Table A.6.1.4.1-2: Cell specific test parameters for E-UTRAN TDD inter-frequency RRC Reestablishment test case

Parameter	Unit		Cell 1		Cell 2		
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel			1			2	
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 TDD	OP.2 TDD	OP.1 TDD
defined in A.3.2.2.1		TDD	TDD	TDD			
(OP.1 TDD) and in							
A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB						
PDCCH_RA	dB		0			0	
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	-Infinity	-Infinity	-Infinity	-Infinity	7
N_{oc} Note 2	dBm/15 KHz		·		-98		
\hat{E}_s/N_{oc}	dB	4	-Infinity	-Infinity	- Infinity	- Infinity	7
RSRP Note 3	dBm/15 KHz	-94	-Infinity	-Infinity	- Infinity	-Infinity	-91
Propagation Condition					AWGN		

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.6.1.4.2 Test Requirements

The RRC re-establishment delay is defined as the time from the start of time period T3, to the moment when the UE starts to send PRACH preambles to cell 2 for sending the RRCConnectionReestablishmentRequest message to cell 2.

The RRC re-establishment delay to an unknown E-UTRA TDD inter frequency cell shall be less than 3 s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in the test is derived from the following expression:

$$T_{re\text{-establish delay}} = T_{UL \text{ grant}} + T_{UE \text{ re-establish delay}}$$

Where:

$$T_{UE_re\text{-establish_delay}} = 50 \text{ ms} + N_{freq} * T_{search} + T_{SI} + T_{PRACH}$$

$$N_{\text{freq}} = 2$$

$$T_{\text{search}} = 800 \text{ ms}$$

 $T_{SI} = 1280$ ms; it is the time required for receiving all the relevant system information as defined in TS 36.331 for the target E-UTRAN TDD cell.

 T_{PRACH} = 15 ms; it is the additional delay caused by the random access procedure.

This gives a total of 2945 ms, allow 3 s in the test case.

A.6.1.5 E-UTRAN FDD Intra-frequency RRC Re-establishment for 5MHz bandwidth

A.6.1.5.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.6.1.1.1.

The parameters of this test are the same as defined in Subclause A.6.1.1.1 except that the values of the parameters in the Table A.6.1.5.1-1 will replace the values of the corresponding parameters in A.6.1.1.1-1, and the values of the parameters in the Table A.6.1.5.1-2 will replace the values of the corresponding parameters in A.6.1.1.1-2.

Table A.6.1.5.1-1: General test parameters for E-UTRAN FDD intra-frequency RRC Re-establishment test case for 5MHz bandwidth

Parameter	Unit	Value	Comment				
PDSCH parameters		DL Reference Measurement Channel R.5 FDD	As specified in clause A.3.1.1.1				
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.11 FDD	As specified in clause A.3.1.2.1				
Channel Bandwidth (BW _{channel})	MHz	5					
	Note 1: See Table A.6.1.1.1-1 for the other parameters.						
Note 2: This test is according to the principle defined in section A.3.7.2.							

Table A.6.1.5.1-2: Cell specific test parameters for E-UTRAN FDD intra-frequency RRC Reestablishment test case for 5MHz bandwidth

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	T3	T1	T2	T3
BW _{channel}	MHz		5			5	
OCNG Patterns		OP.15	OP.15	OP.16	OP.16 FDD	OP.16 FDD	OP.15 FDD
defined in A.3.2.1.15		FDD	FDD	FDD			
(OP.15 FDD) and							
A.3.2.1.16 (OP.16							
FDD)							
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral							

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: See Table A.6.1.5.1-2 for the other parameters.

A.6.1.5.2 Test Requirements

The test requirements defined in section A.6.1.1.2 shall apply to this test case.

A.6.1.6 E-UTRAN FD-FDD Intra-frequency RRC Re-establishment for UE category 0

A.6.1.6.1 Test Purpose and Environment

The purpose is to verify that the E-UTRA FDD intra-frequency RRC re-establishment delay is within the specified limits. These tests will verify the requirements in clause 6.1.2.

The test parameters are given in table A.6.1.6.1-1 and table A.6.1.6.1-2 below. The test consists of 3 successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time period T2, cell 1, which is the active cell, is deactivated. The time period T3 starts after the occurrence of the radio link failure.

Table A.6.1.6.1-1: General test parameters for E-UTRAN FDD intra-frequency RRC Re-establishment test case

Parameter		Unit	Value	Comment
PDSCH parameter	S		DL Reference Measurement Channel R.13 FDD	As specified in clause A.3.1.1.3
PCFICH/PDCCH/P	PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chann	nel Number		1	Only one FDD carrier frequency is used.
Channel Bandwidth	n (BW _{channel})	MHz	10	
N310		-	1	Maximum consecutive out-of-sync indications from lower layers
N311		-	1	Minimum consecutive in-sync indications from lower layers
T310		ms	0	Radio link failure timer; T310 is disabled
T311		ms	3000	RRC re-establishment timer
DRX			OFF	
CP length			Normal	
Access Barring Info	ormation	-	Not Sent	No additional delays in random access procedure.
PRACH configuration index			4	As specified in table 5.7.1-2 in TS 36.211
Time offset betwee	n cells	ms	3	Asynchronous cells
T1		S	5	
T2		ms	200	
T3		S	3	

Table A.6.1.6.1-2: Cell specific test parameters for E-UTRAN FDD intra-frequency RRC Reestablishment test case

Parameter	Unit		Cell 1		Cell 2		
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 FDD	OP.2 FDD	OP.1 FDD
defined in A.3.2.1.1		FDD	FDD	FDD			
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		•			•	
PDCCH_RA	dB		0			0	
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	1.54	-Infinity	-Infinity	-3.79	4	4
N_{oc} Note 2	dBm/15 KHz	-98					
\hat{E}_s/N_{oc}	dB	7	-Infinity	-Infinity	4	4	4
RSRP Note 3	dBm/15 KHz	-91	-Infinity	-Infinity	-94	-94	-94
Propagation Condition		AWGN					
	e used such that	both cells a	re fully alloca	ated and a c	onstant total tra	ansmitted power	er spectral
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral							

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectra density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.6.1.6.2 Test Requirements

The RRC re-establishment delay is defined as the time from the start of time period T3, to the moment when the UE starts to send PRACH preambles to cell 2 for sending the RRCConnectionReestablishmentRequest message to cell 2.

The RRC re-establishment delay to a known E-UTRA FDD intra frequency cell shall be less than 1.5 s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in the test is derived from the following expression:

$$T_{re-establish delay} = T_{UL grant} + T_{UE re-establish delay}$$
.

Where:

$$T_{UE_re\text{-}establish_delay} = 50 \ ms + N_{freq} * T_{search} + T_{SI} + T_{PRACH}$$

$$N_{\text{freq}} = 1$$

$$T_{\text{search}} = 100 \text{ ms}$$

 T_{SI} = 1280 ms; it is the time required for receiving all the relevant system information as defined in TS 36.331 for the target E-UTRAN FDD cell.

 $T_{PRACH} = 15$ ms; it is the additional delay caused by the random access procedure.

This gives a total of 1445 ms, allow 1.5 s in the test case.

A.6.1.7 E-UTRAN HD-FDD Intra-frequency RRC Re-establishment for UE category 0

A.6.1.7.1 Test Purpose and Environment

The purpose is to verify that the E-UTRA FDD intra-frequency RRC re-establishment delay is within the specified limits. These tests will verify the requirements in clause 6.1.2.

The test parameters are given in table A.6.1.7.1-1 and table A.6.1.7.1-2 below. The test consists of 3 successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time period T2, cell 1, which is the active cell, is deactivated. The time period T3 starts after the occurrence of the radio link failure.

Table A.6.1.7.1-1: General test parameters for E-UTRAN HD-FDD intra-frequency RRC Reestablishment test case

Parameter		Unit	Value	Comment
PDSCH paramete	PDSCH parameters		DL Reference Measurement Channel R.1 HD-FDD	As specified in clause A.3.1.1.4
PCFICH/PDCCH/PHICH parameters			DL Reference Measurement Channel R.3 HD-FDD	As specified in clause A.3.1.2.3
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chan	nel Number		1	Only one FDD carrier frequency is used.
Channel Bandwidt	h (BW _{channel})	MHz	10	
N310		-	1	Maximum consecutive out-of-sync indications from lower layers
N311		-	1	Minimum consecutive in-sync indications from lower layers
T310		ms	0	Radio link failure timer; T310 is disabled
T311		ms	3000	RRC re-establishment timer
DRX			OFF	
CP length			Normal	
Access Barring Inf	Access Barring Information		Not Sent	No additional delays in random access procedure.
PRACH configurat	PRACH configuration index		4	As specified in table 5.7.1-2 in TS 36.211
Time offset between	Time offset between cells		3	Asynchronous cells
T1			5	
T2		ms	200	
T3		S	3	

Table A.6.1.7.1-2: Cell specific test parameters for E-UTRAN HD-FDD intra-frequency RRC Reestablishment test case

Parameter	Unit		Cell 1		Cell 2		
		T1	T2	T3	T1	T2	Т3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 FDD	OP.2 FDD	OP.1 FDD
defined in A.3.2.1.1		FDD	FDD	FDD			
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		0			0	
PDCCH_RA	dB		0			0	
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
\hat{E}_{s}/I_{ot}	dB	1.54	-Infinity	-Infinity	-3.79	4	4
$N_{oc}^{ m Note 2}$	dBm/15 KHz	-98					
\hat{E}_s/N_{oc}	dB	7	-Infinity	-Infinity	4	4	4
RSRP Note 3	dBm/15 KHz	-91	-Infinity	-Infinity	-94	-94	-94
Propagation Condition			•		AWGN	•	•
Note 1: OCNG shall b	e used such that	both cells a	re fully alloca	ated and a co	onstant total tra	ansmitted powe	er spectral

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.6.1.7.2 Test Requirements

The RRC re-establishment delay is defined as the time from the start of time period T3, to the moment when the UE starts to send PRACH preambles to cell 2 for sending the RRCConnectionReestablishmentRequest message to cell 2.

The RRC re-establishment delay to a known E-UTRA FDD intra frequency cell shall be less than 1.5 s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in the test is derived from the following expression:

$$T_{re-establish delay} = T_{UL grant} + T_{UE re-establish delay}$$
.

Where:

$$T_{UE_re\text{-establish_delay}} = 50 \text{ ms} + N_{freq} * T_{search} + T_{SI} + T_{PRACH}$$

$$N_{freq} = 1$$

$$T_{\text{search}} = 100 \text{ ms}$$

 T_{SI} = 1280 ms; it is the time required for receiving all the relevant system information as defined in TS 36.331 for the target E-UTRAN FDD cell.

 T_{PRACH} = 15 ms; it is the additional delay caused by the random access procedure.

This gives a total of 1445 ms, allow 1.5 s in the test case.

A.6.1.8 E-UTRAN TDD Intra-frequency RRC Re-establishment for UE category 0

A.6.1.8.1 Test Purpose and Environment

The purpose is to verify that the E-UTRA TDD intra-frequency RRC re-establishment delay is within the specified limits. These tests will verify the requirements in clause 6.1.2.

The test parameters are given in table A.6.1.8.1-1 and table A.6.1.8.1-2 below. The test consists of 3 successive time periods, with time duration of T1, T2 and T3 respectively. At the start of time period T2, cell 1, which is the active cell, is deactivated. The time period T3 starts after the occurrence of the radio link failure.

Table A.6.1.8.1-1: General test parameters for E-UTRAN TDD intra-frequency RRC Re-establishment test case

Parameter		Unit	Value	Comment
PDSCH parameters			DL Reference Measurement Channel R.12 TDD	As specified in clause A.3.1.1.5
PCFICH/PDCCH/I	PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.2
			Channel R.6 TDD	·
Initial conditions	Active cell		Cell 1	
	Neighbouring cell		Cell 2	
Final condition	Active cell		Cell 2	
E-UTRA RF Chan	nel Number		1	Only one TDD carrier frequency is used.
Channel Bandwidt	th (BW _{channel})	MHz	10	
N310		-	1	Maximum consecutive out-of-sync indications from lower layers
N311		-	1	Minimum consecutive in-sync indications from lower layers
T310		ms	0	Radio link failure timer; T310 is disabled
T311		ms	3000	RRC re-establishment timer
DRX			OFF	
CP length			Normal	
Access Barring Inf	formation	-	Not Sent	No additional delays in random access procedure.
Special subframe	configuration		6	As specified in table 4.2-1 in TS 36.211
Uplink-downlink co	onfiguration		1	As specified in table 4.2-2 in TS 36.211
PRACH configuration index			53	As specified in table 5.7.1-3 in TS 36.211
Time offset between	en cells	μs	3	Synchronous cells
T1		s	5	
T2		ms	200	
T3		S	3	

Table A.6.1.8.1-2: Cell specific test parameters for E-UTRAN TDD intra-frequency RRC Reestablishment test case

Parameter	Unit		Cell 1		Cell 2		
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns		OP.1	OP.1	OP.2	OP.2 TDD	OP.2 TDD	OP.1 TDD
defined in A.3.2.2.1		TDD	TDD	TDD			
(OP.1 TDD) and in							
A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		•			•	
PDCCH_RA	dB		0			0	
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
\hat{E}_{s}/I_{ot}	dB	1.54	-Infinity	-Infinity	-3.79	4	4
$N_{oc}^{ m Note~2}$	dBm/15 KHz	-98					
\hat{E}_s/N_{oc}	dB	7	-Infinity	-Infinity	4	4	4
RSRP Note 3	dBm/15 KHz	-91	-Infinity	-Infinity	-94	-94	-94
Propagation Condition	AWGN						
	e used such that	both cells a	are fully alloca	ated and a c	onstant total tra	ansmitted power	er spectral

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.6.1.8.2 Test Requirements

The RRC re-establishment delay is defined as the time from the start of time period T3, to the moment when the UE starts to send PRACH preambles to cell 2 for sending the RRCConnectionReestablishmentRequest message to cell 2.

The RRC re-establishment delay to a known E-UTRA TDD intra frequency cell shall be less than 1.5 s.

The rate of correct RRC re-establishments observed during repeated tests shall be at least 90%.

NOTE: The RRC re-establishment delay in the test is derived from the following expression:

$$T_{re-establish delay} = T_{UL grant} + T_{UE re-establish delay}$$
.

Where:

$$T_{UE_re\text{-}establish_delay} = 50 \ ms + N_{freq} * T_{search} + T_{SI} + T_{PRACH}$$

$$N_{freq} = 1$$

$$T_{\text{search}} = 100 \text{ ms}$$

 T_{SI} = 1280 ms; it is the time required for receiving all the relevant system information as defined in TS 36.331 for the target E-UTRAN TDD cell.

 T_{PRACH} = 15 ms; it is the additional delay caused by the random access procedure.

This gives a total of 1445 ms, allow 1.5 s in the test case.

A.6.2 Random Access

A.6.2.1 E-UTRAN FDD – Contention Based Random Access Test

A.6.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the behavior of the random access procedure is according to the requirements and that the PRACH power settings and timing are within specified limits. This test will verify the requirements in Clause 6.2.2 and Clause 7.1.2 in an AWGN model.

For this test a single cell is used. The test parameters are given in tables A.6.2.1.1-1 and A.6.2.1.1-2.

Table A.6.2.1.1-1: General test parameters for FDD contention based random access test

Parameter	Unit	Value	Comments				
E-UTRA RF Channel Number		1					
BW _{channel}	MHz	10					
OCNG Pattern Note 1		OP.1/2 FDD Note 1	As defined in A.3.2.1.1/2.				
PDSCH parameters Note 4		DL Reference Measurement	As defined in A.3.1.1.1.				
·		Channel R.0 FDD Note 4					
PCFICH/PDCCH/PHICH		DL Reference Measurement	As defined in A.3.1.2.1.				
parameters		Channel R.6 FDD					
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB	0					
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA Note 1	dB						
OCNG_RB Note 1	dB						
\hat{E}_{s}/I_{ot}	dB	3					
N_{oc}	dBm/15 KHz	-98					
\hat{E}_s/N_{oc}	dB	3					
lo Note 2	dBm/9 MHz	-65.5					
RSRP Note 3	dBm/15 KHz	-95					
referenceSignalPower	dBm/15 KHz	-5	As defined in clause 6.3.2 in TS 36.331.				
Configured UE transmitted	dBm	23	As defined in clause 6.2.5				
power ($P_{ m CMAX}$)			in TS 36.101.				
PRACH Configuration Index	-	4	As defined in table 5.7.1-2 in TS 36.211.				
Backoff Parameter Index	-	2	As defined in table 7.2-1 in TS 36.321.				
Propagation Condition	-	AWGN					
Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. The OCNG pattern is chosen during the test							

Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. The OCNG pattern is chosen during the test according to the presence of a DL reference measurement channel.

Note 2: lo level has been derived from other parameters for information purpose. It is not a settable parameter.

Note 3: RSRP level has been derived from other parameters for information purposes. It is not a settable parameter.

Note 4: The DL PDSCH reference measurement channel is used in the test only when a downlink transmission dedicated to the UE under test is required.

Table A.6.2.1.1-2: RACH-Configuration parameters for FDD contention based random access test

Field	Value	Comment			
powerRampingStep	dB2				
preambleInitialReceivedTargetPower	dBm-120				
preambleTransMax	n6				
ra-ResponseWindowSize	sf10	10 sub-frames			
mac-ContentionResolutionTimer	sf48	48 sub-frames			
maxHARQ-Msg3Tx	4				
Note: For further information see Clause 6.3.2 in TS 36.331.					

A.6.2.1.2 Test Requirements

Contention based random access is triggered by *not* explicitly assigning a random access preamble via dedicated signalling in the downlink.

A.6.2.1.2.1 Random Access Response Reception

To test the UE behavior specified in Subclause 6.2.2.1.1 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. In response to the first 4 preambles, the System Simulator shall transmit a Random Access Response *not* corresponding to the transmitted Random Access Preamble.

The UE may stop monitoring for Random Access Response(s) and shall transmit the msg3 if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm. The power of the first preamble shall be -30 dBm with an accuracy specified in clause 6.3.5.1.1 of TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in clause 6.3.5.2.1 of TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.1.2.2 No Random Access Response Reception

To test the UE behavior specified in subclause 6.2.2.1.2 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. The System Simulator shall *not* respond to the first 4 preambles.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if no Random Access Response is received within the RA Response window.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm with an accuracy specified in clause 6.3.5.1.1 of TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in clause 6.3.5.2.1 of TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.1.2.3 Receiving a NACK on msg3

To test the UE behavior specified in subclause 6.2.2.1.3 the System Simulator shall NACK *all* UE msg3 following a successful Random Access Response.

The UE shall re-transmit the msg3 upon the reception of a NACK on msg3 until the maximum number of HARQ re-transmissions is reached.

A.6.2.1.2.4 Reception of an Incorrect Message over Temporary C-RNTI

To test the UE behavior specified in Subclause 6.2.2.1.5 the System Simulator shall send a message addressed to the temporary C-RNTI with a UE Contention Resolution Identity included in the MAC control element *not* matching the CCCH SDU transmitted in msg3 uplink message.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires unless the received message includes a UE Contention Resolution Identity MAC control element and the UE Contention Resolution Identity included in the MAC control element matches the CCCH SDU transmitted in the uplink message.

A.6.2.1.2.5 Reception of a Correct Message over Temporary C-RNTI

To test the UE behavior specified in Subclause 6.2.2.1.5 the System Simulator shall send a message addressed to the temporary C-RNTI with a UE Contention Resolution Identity included in the MAC control element matching the CCCH SDU transmitted in the msg3 uplink message.

The UE shall send ACK if the Contention Resolution is successful.

A.6.2.1.2.6 Contention Resolution Timer expiry

To test the UE behavior specified in Subclause 6.2.2.1.6 the System Simulator shall *not* send a response to a msg3.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if the Contention Resolution Timer expires.

A.6.2.2 E-UTRAN FDD – Non-Contention Based Random Access Test

A.6.2.2.1 Test Purpose and Environment

The purpose of this test is to verify that the behavior of the random access procedure is according to the requirements and that the PRACH power settings and timing are within specified limits. This test will verify the requirements in Clause 6.2.2 and Clause 7.1.2 in an AWGN model.

For this test a single cell is used. The test parameters are given in tables A.6.2.2.1-1 and A.6.2.2.1-2.

Table A.6.2.2.1-1: General test parameters for FDD non-contention based random access test

Parameter	Unit	Value	Comments
E-UTRA RF Channel Number		1	
BW _{channel}	MHz	10	
OCNG Pattern		OP.1 FDD	As defined in A.3.2.1.1.
PDSCH parameters		DL Reference Measurement	As defined in A.3.1.1.1.
		Channel R.0 FDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As defined in A.3.1.2.1.
parameters		Channel R.6 FDD	
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB	0	
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA Note 1	dB		
OCNG_RB Note 1	dB		
$\hat{E}_{\scriptscriptstyle{\mathrm{s}}}/I_{\scriptscriptstyle{\mathrm{ot}}}$	dB	3	
N_{oc}	dBm/15 KHz	-98	
\hat{E}_s/N_{oc}	dB	3	
lo Note 2	dBm/9 MHz	-65.5	
RSRP Note 3	dBm/15 KHz	-95	
referenceSignalPower	dBm/15 KHz	-5	As defined in clause 6.3.2 in TS 36.331.
Configured UE transmitted	dBm	23	As defined in clause 6.2.5 in TS 36.101.
power ($P_{ m CMAX}$)			111 10 30.101.
PRACH Configuration Index	-	4	As defined in table 5.7.1-2 in TS 36.211.
Backoff Parameter Index	-	2	As defined in table 7.2-1 in TS 36.321.
Propagation Condition	-	AWGN	

Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: lo level has been derived from other parameters for information purpose. It is not a settable

Note 3: RSRP level has been derived from other parameters for information purposes. It is not a settable parameter.

Table A.6.2.2.1-2: RACH-Configuration parameters for FDD non-contention based random access test

Field	Value	Comment			
powerRampingStep	dB2				
preambleInitialReceivedTargetPower	dBm-120				
preambleTransMax					
ra-ResponseWindowSize sf10 10 sub-frames					
Note: For further information see Clause 6.3.2 in TS 36.331.					

A.6.2.2.2 Test Requirements

Non-Contention based random access is triggered by explicitly assigning a random access preamble via dedicated signalling in the downlink.

A.6.2.2.2.1 Random Access Response Reception

To test the UE behavior specified in Subclause 6.2.2.2.1 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. In response to the first 4 preambles, the System Simulator shall transmit a Random Access Response *not* corresponding to the transmitted Random Access Preamble.

The UE may stop monitoring for Random Access Response(s) if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-transmit the preamble with the calculated PRACH transmission power if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm with an accuracy specified in clause 6.3.5.1.1 of TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in clause 6.3.5.2.1 of TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.2.2.2 No Random Access Response Reception

To test the UE behavior specified in subclause 6.2.2.2.2 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. The System Simulator shall *not* respond to the first 4 preambles.

The UE shall re-transmit the preamble with the calculated PRACH transmission power.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm with an accuracy specified in clause 6.3.5.1.1 of TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in clause 6.3.5.2.1 of TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.3 E-UTRAN TDD – Contention Based Random Access Test

A.6.2.3.1 Test Purpose and Environment

The purpose of this test is to verify that the behavior of the random access procedure is according to the requirements and that the PRACH power settings and timing are within specified limits. This test will verify the requirements in Clause 6.2.2 and Clause 7.1.2 in an AWGN model.

For this test a single cell is used. The test parameters are given in tables A.6.2.3.1-1 and A.6.2.3.1-2.

Table A.6.2.3.1-1: General test parameters for TDD contention based random access test

Parameter	Unit	Value	Comments
E-UTRA RF Channel Number	-	1	
BW _{channel}	MHz	10	
OCNG Pattern Note 1	-	OP.1/2 TDD Note 1	As defined in A.3.2.2.1/2.
PDSCH parameters Note 4	-	DL Reference Measurement Channel R.0 TDD Note 4	As defined in A.3.1.1.2.
PCFICH/PDCCH/PHICH parameters	-	DL Reference Measurement Channel R.6 TDD	As defined in A.3.1.2.2.
Special subframe configuration	-	6	As specified in table 4.2-1 in TS 36.211.
Uplink-downlink configuration	-	1	As specified in table 4.2-2 in TS 36.211.
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB	0	
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA Note 1	dB		
OCNG_RB Note 1	dB		
\hat{E}_{s}/I_{ot}	dB	3	
N_{oc}	dBm/15 KHz	-98	
\hat{E}_s/N_{oc}	dB	3	
lo Note 2	dBm/9 MHz	-65.5	
RSRP Note 3	dBm/15 KHz	-95	
referenceSignalPower	dBm/15 KHz	-5	As defined in clause 6.3.2 in TS 36.331.
Configured UE transmitted	dBm	23	As defined in clause 6.2.5
power ($P_{ m CMAX}$)			in TS 36.101.
PRACH Configuration Index	-	53	As defined in table 5.7.1-3 in TS 36.211.
Backoff Parameter Index	-	2	As defined in table 7.2-1 in TS 36.321.
Propagation Condition	-	AWGN	
N / / 00NO III			

Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. The OCNG pattern is chosen during the test according to the presence of a DL reference measurement channel.

Note 2: lo level has been derived from other parameters for information purpose. It is not a settable parameter.

Note 3: RSRP level has been derived from other parameters for information purposes. It is not a settable parameter.

Note 4: The DL PDSCH reference measurement channel is used in the test only when a downlink transmission dedicated to the UE under test is required.

Table A.6.2.3.1-2: RACH-Configuration parameters for TDD contention based random access test

Field	Value	Comment	
numberOfRA-Preambles	n52		
sizeOfRA-PreamblesGroupA	n52	No group B.	
powerRampingStep	dB2		
preambleInitialReceivedTargetPower	dBm-120		
preambleTransMax	n6		
ra-ResponseWindowSize	sf10	10 sub-frames	
mac-ContentionResolutionTimer	sf48	48 sub-frames	
maxHARQ-Msg3Tx	4		
Note: For further information see Clause 6.3.2 in TS 36.331.			

A.6.2.3.2 Test Requirements

Contention based random access is triggered by *not* explicitly assigning a random access preamble via dedicated signalling in the downlink.

A.6.2.3.2.1 Random Access Response Reception

To test the UE behavior specified in Subclause 6.2.2.1.1 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. In response to the first 4 preambles, the System Simulator shall transmit a Random Access Response *not* corresponding to the transmitted Random Access Preamble.

The UE may stop monitoring for Random Access Response(s) and shall transmit the msg3 if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -22 dBm with an accuracy specified in clause 6.3.5.1.1 of TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in clause 6.3.5.2.1 of TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.3.2.2 No Random Access Response reception

To test the UE behavior specified in Subclause 6.2.2.1.2 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. The System Simulator shall *not* respond to the first 4 preambles.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if no Random Access Response is received within the RA Response window.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -22 dBm with an accuracy specified in clause 6.3.5.1.1 of TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in clause 6.3.5.2.1 of TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.3.2.3 Receiving a NACK on msg3

To test the UE behavior specified in Subclause 6.2.2.1.3 the System Simulator shall NACK *all* UE msg3 following a successful Random Access Response.

The UE shall re-transmit the msg3 upon the reception of a NACK on msg3 until the maximum number of HARQ re-transmissions is reached.

A.6.2.3.2.4 Reception of an Incorrect Message over Temporary C-RNTI

To test the UE behavior specified in Subclause 6.2.2.1.5 the System Simulator shall send a message addressed to the temporary C-RNTI with a UE Contention Resolution Identity included in the MAC control element *not* matching the CCCH SDU transmitted in msg3 uplink message.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires unless the received message includes a UE Contention Resolution Identity MAC control element and the UE Contention Resolution Identity included in the MAC control element matches the CCCH SDU transmitted in the uplink message.

A.6.2.3.2.5 Reception of a Correct Message over Temporary C-RNTI

To test the UE behavior specified in Subclause 6.2.2.1.5 the System Simulator shall send a message addressed to the temporary C-RNTI with a UE Contention Resolution Identity included in the MAC control element matching the CCCH SDU transmitted in the msg3 uplink message.

The UE shall send ACK if the Contention Resolution is successful.

A.6.2.3.2.6 Contention Resolution Timer expiry

To test the UE behavior specified in Subclause 6.2.2.1.6 the System Simulator shall not send a response to a msg3.

The UE shall re-select a preamble and transmit with the calculated PRACH transmission power when the backoff time expires if the Contention Resolution Timer expires.

A.6.2.4 E-UTRAN TDD – Non-Contention Based Random Access Test

A.6.2.4.1 Test Purpose and Environment

The purpose of this test is to verify that the behavior of the random access procedure is according to the requirements and that the PRACH power settings and timing are within specified limits. This test will verify the requirements in Clause 6.2.2 and Clause 7.1.2 in an AWGN model.

For this test a single cell is used. The test parameters are given in tables A.6.2.4.1-1 and A.6.2.4.1-2.

Table A.6.2.4.1-1: General test parameters for TDD non-contention based random access test

Parameter	Unit	Value	Comments
E-UTRA RF Channel Number	-	1	
BW _{channel}	MHz	10	
OCNG Pattern	-	OP.1 TDD	As defined in A.3.2.2.1.
PDSCH parameters	-	DL Reference Measurement	As defined in A.3.1.1.2.
·		Channel R.0 TDD	
PCFICH/PDCCH/PHICH	-	DL Reference Measurement	As defined in A.3.1.2.2.
parameters		Channel R.6 TDD	
Special subframe	-	6	As specified in table 4.2-1
configuration			in TS 36.211.
Uplink-downlink configuration	-	1	As specified in table 4.2-2 in TS 36.211.
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB	0	
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA Note 1	dB		
OCNG_RB Note 1	dB		
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	3	
N_{oc}	dBm/15 KHz	-98	
\hat{E}_s/N_{oc}	dB	3	
l lo ^{Note 2}	dBm/9 MHz	-65.5	
RSRP Note 3	dBm/15 KHz	-95	
referenceSignalPower	dBm/15 KHz	-5	As defined in clause 6.3.2 in TS 36.331.
Configured UE transmitted	dBm	23	As defined in clause 6.2.5
power ($P_{ m CMAX}$)			in TS 36.101.
PRACH Configuration Index	-	53	As defined in table 5.7.1-3 in TS 36.211.
Backoff Parameter Index	-	2	As defined in table 7.2-1 in TS 36.321.
Propagation Condition	-	AWGN	
	ich that the call i	is fully allocated and a constant	total transmitted navyer

Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: lo level has been derived from other parameters for information purpose. It is not a settable parameter.

Note 3: RSRP level has been derived from other parameters for information purposes. It is not a settable parameter.

Table A.6.2.4.1-2: RACH-Configuration parameters for TDD non-contention based random access test

Field	Value	Comment	
powerRampingStep	dB2		
preambleInitialReceivedTargetPower	dBm-120		
preambleTransMax			
ra-ResponseWindowSize sf10 10 sub-frames			
Note: For further information see Clause 6.3.2 in TS 36.331.			

A.6.2.4.2 Test Requirements

Non-Contention based random access is triggered by explicitly assigning a random access preamble via dedicated signalling in the downlink.

A.6.2.4.2.1 Random Access Response Reception

To test the UE behavior specified in Subclause 6.2.2.2.1 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. In response to the first 4 preambles, the System Simulator shall transmit a Random Access Response *not* corresponding to the transmitted Random Access Preamble.

The UE may stop monitoring for Random Access Response(s) if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-transmit the preamble with the calculated PRACH transmission power if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -22 dBm with an accuracy specified in clause 6.3.5.1.1 of TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in clause 6.3.5.2.1 of TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.4.2.2 No Random Access Response Reception

To test the UE behavior specified in Subclause 6.2.2.2.2 the System Simulator shall transmit a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator. The System Simulator shall *not* respond to the first 4 preambles.

The UE shall re-transmit the preamble with the calculated PRACH transmission power.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -22 dBm with an accuracy specified in clause 6.3.5.1.1 of TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in clause 6.3.5.2.1 of TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.5 E-UTRAN FDD – Contention Based Random Access Test for 5MHz bandwidth

A.6.2.5.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.6.2.1.1.

The parameters of this test are the same as defined in Subclause A.6.2.1.1 except that the values of the parameters in the Table A.6.2.5.1-1 will replace the values of the corresponding parameters in A.6.2.1.1-1

Table A.6.2.5.1-1: General test parameters for FDD contention based random access test for 5MHz bandwidth

	Parameter	Unit	Value	Comments	
BW _{channel}		MHz	5		
OCNG Pa	attern ^{Note 1}		OP.15/16 FDD Note 1	As defined in	
				A.3.2.1.15/16.	
PDSCH p	parameters Note 2		DL Reference Measurement Channel R.5 FDD Note 2	As defined in A.3.1.1.1.	
PCFICH/	PDCCH/PHICH		DL Reference Measurement	As defined in A.3.1.2.1.	
paramete	ers		Channel R.11 FDD		
lo Note 2		dBm/4.5	-68.5		
10		MHz			
Note 1:	Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power				
	spectral density is achieved for all OFDM symbols. The OCNG pattern is chosen during the test				
	according to the presence of a DL reference measurement channel.				
Note 2:	Note 2: The DL PDSCH reference measurement channel is used in the test only when a downlink				
	transmission dedicated to the UE under test is required.				
Note 3:	Note 3: See Table A.6.2.1.1-1 for the other parameters.				
Note 4:	ote 4: This test is according to the principle defined in section A.3.7.2.				

A.6.2.5.2 Test Requirements

The test requirements defined in section A.6.2.1.2 shall apply to this test case.

A.6.2.6 E-UTRAN FDD – Non-contention Based Random Access Test for 5MHz bandwidth

A.6.2.6.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.6.2.2.1.

The parameters of this test are the same as defined in Subclause A.6.2.2.1except that the values of the parameters in the Table A.6.2.6.1-1 will replace the values of the corresponding parameters in A.6.2.2.1-1

Table A.6.2.6.1-1: General test parameters for FDD non-contention based random access test for 5MHz bandwidth

Parameter	Unit	Value	Comments	
BW _{channel}	MHz	5		
OCNG Pattern Note 1		OP.15 FDD Note 1	As defined in A.3.2.1.15.	
PDSCH parameters Note 2		DL Reference Measurement Channel R.5 FDD Note 2	As defined in A.3.1.1.1.	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.11 FDD	As defined in A.3.1.2.1.	
lo Note 2	dBm/4.5 MHz	-68.5		
Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.				
Note 2: Io level has been de parameter				
Note 3: See Table A.6.2.2.1	3: See Table A.6.2.2.1-1 for the other parameters.			
Note 4: This test is according	·			

A.6.2.6.2 Test Requirements

The test requirements defined in section A.6.2.2.2 shall apply to this test case.

A.6.2.7 E-UTRAN FDD – Non-Contention Based Random Access Test For SCell

A.6.2.7.1 Test Purpose and Environment

The purpose of this test is to verify that the behavior of the random access procedure, for the SCell, is according to the requirements and that the PRACH power settings and timing, for the SCell, are within specified limits. This test will verify the requirements in Clause 6.2.2 and Clause 7.1.2 in an AWGN model.

For this test two cells are used. Cell 1 is PCell and Cell 2 is SCell. PCell and SCell are different timing advance group. Cell 1 is in the primary Timing Advance Group (pTAG) and Cell 2 is in the secondary Timing Advance Group (sTAG). The purpose of the PCell is to allow the SCell to be configured and to handle the Random Access Response which takes place on PCell. The test parameters are given in tables A.6.2.7.1-1 and A.6.2.7.1-2.

Table A.6.2.7.1-1: General test parameters for FDD non-contention based random access test

Parameter	Unit	Cell 1	Cell 2	Comments
E-UTRA RF Channel Number		1	2	
BW _{channel}	MHz	10	10	
Active PCell		Cell 1		Primary cell of RF
				channel number 1.
Active SCell			Cell 2	Secondary cell of RF
				channel number 2.
TAG configuration		pTAG	sTAG	pTAG+sTAG
-				configures Cell 1 and
				Cell 2 to separate
				TAGs
OCNG Pattern		OP.1 FDD	OP.1 FDD	As defined in
				A.3.2.1.11.
PDSCH parameters		DL Reference	DL Reference	As defined in A.3.1.1.1.
·		Measurement Channel	Measurement	
		R.0 FDD	Channel R.0 FDD	
PCFICH/PDCCH/PHICH		DL Reference	DL Reference	As defined in A.3.1.2.1.
parameters		Measurement Channel	Measurement	
		R.6 FDD	Channel R.6 FDD	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	0	0	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA Note 1	dB			
OCNG_RB Note 1	dB			
	dB	3	3	
\hat{E}_{s}/I_{ot}		_		
N_{oc}	dBm/15 KHz	-98	-98	
	I.D.			
\hat{E}_s/N_{oc}	dB	3	3	
lo Note 2	dBm/9 MHz	-65.5	-65.5	
RSRP Note 3	dBm/15 KHz	-95	-65.5 -95	+
KOKF	dBm/15 KHz	- 9 5 -5	-93 -5	As defined in clause
referenceSignalPower	UDIII/13 KHZ	-5	-5	6.3.2 in TS 36.331.
Configured UE transmitted	dPm	22	22	
	dBm	23	23	As defined in clause 6.2.5 in TS 36.101.
power ($P_{ m CMAX,c}$)				0.2.5 11 13 30.101.
PRACH Configuration Index	_	4	4	As defined in table
1 103011 Comiguration index	_	 	7	5.7.1-2 in TS 36.211.
Backoff Parameter Index	-	2	2	As defined in table 7.2-
Dackon i alametel muex	_		۷	1 in TS 36.321.
Propagation Condition	_	AWGN	AWGN	1 111 10 00.021.
Note to CONO de all le aveced		AVVGIN	AVVGIN	<u> </u>

Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Io level has been derived from other parameters for information purpose. It is not a settable parameter.

RSRP level has been derived from other parameters for information purposes. It is not a settable parameter.

Note 2:

Note 3:

Table A.6.2.7.1-2: RACH-Configuration parameters for FDD non-contention based random access test

Field	Value	Comment		
powerRampingStep	dB2			
preambleInitialReceivedTargetPower	dBm-120			
preambleTransMax	n6			
ra-ResponseWindowSize	sf10	10 sub-frames		
Note: For further information see Clause 6.3.2 in TS 36.331.				

A.6.2.7.2 Test Requirements

Non-Contention based random access is triggered by explicitly assigning a random access preamble via dedicated signalling in the downlink.

A.6.2.7.2.1 Random Access Response Reception

To test the UE behavior specified in Subclause 6.2.2.2.1 the System Simulator shall transmit, on Cell 1, the PCell, a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator, on Cell 2. In response to the first 4 preambles, the System Simulator shall transmit a Random Access Response *not* corresponding to the transmitted Random Access Preamble.

The UE may stop monitoring for Random Access Response(s) if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-transmit the preamble with the calculated PRACH transmission power if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm with an accuracy specified in clause 6.3.5.1.1 of TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in clause 6.3.5.2.1 of TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.7.2.2 No Random Access Response Reception

To test the UE behavior specified in subclause 6.2.2.2.2 the System Simulator shall transmit, on Cell 1, the PCell, a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator on Cell 2. The System Simulator shall *not* respond to the first 4 preambles.

The UE shall re-transmit the preamble with the calculated PRACH transmission power.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm with an accuracy specified in clause 6.3.5.1.1 of TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in clause 6.3.5.2.1 of TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.7.2.3 Stop Preamble transmission if maximum number of preamble transmission counter has been reached

To test the UE behavior specified in Subclause 6.2.2 the System Simulator shall transmit, in response to the first 6 preambles, a Random Access Response *not* corresponding to the transmitted Random Access Preamble on Cell 1, the PCell. The UE shall stop transmitting preambles after 6 preambles.

The UE shall re-transmit the preamble with the calculated PRACH transmission power.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -30 dBm with an accuracy specified in clause 6.3.5.1.1 of TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in clause 6.3.5.2.1 of TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.8 E-UTRAN TDD – Non-Contention Based Random Access Test For SCell

A.6.2.8.1 Test Purpose and Environment

This test is applicable for UE supporting the optional capability of Multiple Timing Advance.

The purpose of this test is to verify that the behavior of the random access procedure, for the SCell, is according to the requirements and that the PRACH power settings and timing, for the SCell, are within specified limits. This test will verify the requirements in Clause 6.2.2 and Clause 7.1.2 in an AWGN model.

For this test two cells are used. Cell 1 is PCell and Cell 2 is SCell. PCell and SCell are different timing advance group. Cell 1 is in the primary Timing Advance Group (pTAG) and Cell 2 is in the secondary Timing Advance Group (sTAG). The purpose of the PCell is to allow the SCell to be configured and to handle the Random Access Response which takes place on PCell. The test parameters are given in tables A.6.2.8.1-1 and A.6.2.8.1-2.

Table A.6.2.8.1-1: General test parameters for TDD non-contention based random access test

Parameter	Unit	Cell 1	Cell 2	Comments
E-UTRA RF Channel Number	-	1	1	
BW _{channel}	MHz	10	10	
Active PCell		Cell 1		Primary cell of RF
		Cell 1		channel number 1.
Active SCell			Cell 2	Secondary cell of RF
				channel number 2.
TAG configuration		pTAG	sTAG	pTAG+sTAG
				configures Cell 1 and
				Cell 2 to separate
				TAGs
OCNG Pattern	-	OP.1 TDD	OP.1 TDD	As defined in
				A.3.2.2.1.
PDSCH parameters	-	DL Reference	DL Reference	As defined in
		Measurement	Measurement	A.3.1.1.2.
		Channel R.0 TDD	Channel R.0 TDD	
PCFICH/PDCCH/PHICH	-	DL Reference	DL Reference	As defined in
parameters		Measurement	Measurement	A.3.1.2.2.
		Channel R.6 TDD	Channel R.6 TDD	
Special subframe	-	6	6	As specified in table
configuration				4.2-1 in TS 36.211.
Uplink-downlink configuration	-	1	1	As specified in table
DDOLL DA	in.			4.2-2 in TS 36.211.
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB	0	0	
PHICH_RB	dB	0	· ·	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA Note 1	dB			
OCNG_RB Note 1	dB			
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	dB	3	3	
N_{oc}	dBm/15 KHz	-98	-98	
\hat{E}_s/N_{oc}	dB	3	3	
Note 2	dBm/9 MHz	-65.5	-65.5	
RSRP Note 3	dBm/15 KHz	-05.5 -95	-65.5 -95	
	dBm/15 KHz	-95 -5	-95 -5	As defined in clause
referenceSignalPower				6.3.2 in TS 36.331.
Configured UE transmitted	dBm	23	23	As defined in clause
power ($P_{ m CMAX,c}$)				6.2.5 in TS 36.101.
PRACH Configuration Index	-	53	53	As defined in table
				5.7.1-3 in TS 36.211.
Backoff Parameter Index	-	2	2	As defined in table
				7.2-1 in TS 36.321.
Propagation Condition	-	AWGN	AWGN	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 41 441	H H		

OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral Note 1: density is achieved for all OFDM symbols.

Io level has been derived from other parameters for information purpose. It is not a settable parameter.

Note 2:

RSRP level has been derived from other parameters for information purposes. It is not a settable parameter. Note 3:

Table A.6.2.8.1-2: RACH-Configuration parameters for TDD non-contention based random access test

Field	Value	Comment		
powerRampingStep	dB2			
preambleInitialReceivedTargetPower	dBm-120			
preambleTransMax	n6			
ra-ResponseWindowSize	sf10	10 sub-frames		
Note: For further information see Clause 6.3.2 in TS 36.331.				

A.6.2.8.2 Test Requirements

Non-Contention based random access is triggered by explicitly assigning a random access preamble via dedicated signalling in the downlink.

A.6.2.8.2.1 Random Access Response Reception

To test the UE behavior specified in Subclause 6.2.2.2.1 the System Simulator shall transmit, on Cell 1, the PCell, a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator, on Cell 2. In response to the first 4 preambles, the System Simulator shall transmit a Random Access Response *not* corresponding to the transmitted Random Access Preamble.

The UE may stop monitoring for Random Access Response(s) if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble.

The UE shall re-transmit the preamble with the calculated PRACH transmission power if all received Random Access Responses contain Random Access Preamble identifiers that do not match the transmitted Random Access Preamble.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -22 dBm with an accuracy specified in clause 6.3.5.1.1 of TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in clause 6.3.5.2.1 of TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.8.2.2 No Random Access Response Reception

To test the UE behavior specified in Subclause 6.2.2.2.2 the System Simulator shall transmit, on Cell 1, the PCell, a Random Access Response containing a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble after 5 preambles have been received by the System Simulator, on Cell 2. The System Simulator shall *not* respond to the first 4 preambles.

The UE shall re-transmit the preamble with the calculated PRACH transmission power.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -22 dBm with an accuracy specified in clause 6.3.5.1.1 of TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in clause 6.3.5.2.1 of TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.2.8.2.3 Stop Preamble transmission if maximum number of preamble transmission counter has been reached

To test the UE behavior specified in Subclause 6.2.2 the System Simulator shall transmit, in response to the first 6 preambles, a Random Access Response *not* corresponding to the transmitted Random Access Preamble on Cell 1, the PCell. The UE shall stop transmitting preambles after 6 preambles.

The UE shall re-transmit the preamble with the calculated PRACH transmission power.

In addition, the power applied to all preambles shall be in accordance with what is specified in Subclause 6.2.2. The power of the first preamble shall be -22 dBm with an accuracy specified in clause 6.3.5.1.1 of TS 36.101 [5]. The relative power applied to additional preambles shall have an accuracy specified in clause 6.3.5.2.1 of TS 36.101 [5].

The transmit timing of all PRACH transmissions shall be within the accuracy specified in Subclause 7.1.2.

A.6.3 RRC Connection Release with Redirection

A.6.3.1 Redirection from E-UTRAN FDD to UTRAN FDD

A.6.3.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct performing the RRC connection release with redirection to the target UTRAN FDD cell. This test will partly verify the RRC connection release with redirection to UTRAN FDD cell requirements in clause 6.3.2.1.

The test parameters are given in Tables A.6.3.1.1-1, A.6.3.1.1-2 and A.6.3.1.1-3 below. The test consists of two successive time periods, with time duration of T1, and T2 respectively. The "RRCConnectionRelease" message containing the relevant system information of Cell 2 shall be sent to the UE during period T1 and the start of T2 is the instant when the last TTI containing the RRC message is sent to the UE. Prior to time duration T2, the UE shall not have any timing information of Cell 2. Cell 2 is powered up at the beginning of the T2.

Table A.6.3.1.1-1: General test parameters for RRC Connection Release with Redirection from E-UTRAN FDD to UTRAN FDD under AWGN propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD)		CPICH Ec/lo	
measurement quantity			
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
UTRA FDD cell list size		16	UTRA cells on UTRA RF channel 1 provided in the " <i>RRCConnectionRelease</i> " message from the E-UTRAN
T1	S	≤5	
T2	S	1	

Table A.6.3.1.1-2: Cell specific test parameters for cell #1 E-UTRAN FDD to UTRAN FDD RRC release with redirection under AWGN propagation conditions

Parameter	Unit	Cell 1			
		T1	T2		
E-UTRA RF Channel Number		1			
BW _{channel}	MHz	10			
OCNG Pattern defined in					
A.3.2.1.1 (OP.1 FDD)		OP.1 F	FDD		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
${ m \hat{E}}_{ m s}/{ m I}_{ m ot}$	dB	4	4		
$N_{oc}^{ m Note 3}$	dBm/15 kHz	-98	3		
\hat{E}_s/N_{oc}	dB	4	4		
RSRP Note 4	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94	-94		
Propagation Condition		AWG	6N		
Note 1: OCNG shall be used		l is fully allocated and a constant	total transmitted power		

spectral density is achieved for all OFDM symbols.

The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 2:

Interference from other cells and noise sources not specified in the test is assumed to be constant Note 3: over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{
m oc}$ to be

RSRP levels have been derived from other parameters for information purposes. They are not Note 4: settable parameters themselves.

Table A.6.3.1.1-3: Cell specific test parameters for cell #2 E-UTRAN FDD to UTRAN FDD RRC release with redirection under AWGN propagation conditions

Parameter	Unit	Cell 2		
		T1	T1	
UTRA RF Channel Number		1		
CPICH_Ec/lor	dB	-10		
PCCPCH_Ec/lor	dB	-12		
SCH_Ec/lor	dB	-12		
PICH_Ec/lor	dB	-15		
DPCH_Ec/lor	dB	N/A		
OCNS		-0.94	1	
\hat{I}_{or}/I_{oc}	dB	- 00	0.02	
I_{oc}	dBm/3.84 MHz	-70		
CPICH_Ec/Io ^{Note 3}	dB	-∞ -13		
Propagation Condition		AWGN		

Note 1: The DPCH level is controlled by the power control loop.

The power of the OCNS channel that is added shall make the total power from the cell to be equal Note 2: to Ior.

This gives an SCH Ec/lo of -15dB Note 3:

A.6.3.1.2 Test Requirements

The UE shall start to transmit random access to Cell 2 less than 650 ms from the beginning of time period T2.

The rate of correct RRC connection release redirection to UTRAN FDD observed during repeated tests shall be at least 90%.

NOTE: The Re-establishment delay in this case can be expressed as

$$T_{connection_release_redirect_UTRA\;FDD} = T_{RRC_procedure_delay} + T_{identify_UTRA\;FDD} + T_{SI_UTRA\;FDD} + T_{RA}$$

where

 $T_{RRC_procedure_delay} = 110 \text{ ms}$

 $T_{identify-UTRA\ FDD} = 500\ ms$

 $T_{SI-UTRA\ FDD}$ = the time required for acquiring all the relevant system information of the target UTRA FDD cell. This time depends upon whether the UE is provided with the relevant system information of the target UTRA FDD cell or not by the E-UTRAN before the RRC connection is released. 0 ms is assumed in this test case.

 T_{RA} = The additional delay caused by the random access procedure. 40 ms is assumed in this test case.

This gives a total of 650 ms.

A.6.3.2 Redirection from E-UTRAN TDD to UTRAN FDD

A.6.3.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct performing the RRC connection release with redirection to the target UTRAN FDD cell. This test will partly verify the RRC connection release with redirection to UTRAN FDD cell requirements in clause 6.3.2.1.

The test parameters are given in Tables A.6.3.2.1-1, A.6.3.2.1-2 and A.6.3.2.1-3 below. The test consists of two successive time periods, with time duration of T1, and T2 respectively. The "RRCConnectionRelease" message containing the relevant system information of Cell 2 shall be sent to the UE during period T1 and the start of T2 is the instant when the last TTI containing the RRC message is sent to the UE. Prior to time duration T2, the UE shall not have any timing information of cell 2. Cell 2 is powered up at the beginning of the T2,

Table A.6.3.2.1-1: General test parameters for RRC Connection Release with Redirection from E-UTRAN TDD to UTRAN FDD under AWGN propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement	As specified in clause A.3.1.1.2.
		Channel R.0 TDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.2.
(E-UTRAN TDD)		Channel R.6 TDD	
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD)		CPICH Ec/lo	
measurement quantity			
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
UTRA FDD cell list size		16	UTRA cells on UTRA RF channel 1 provided
			in the "RRCConnectionRelease" message
			from the E-UTRAN
T1	S	≤5	
T2	S	1	

Table A.6.3.2.1-2: Cell specific test parameters for cell #1 E-UTRAN TDD to UTRAN FDD RRC release with redirection under AWGN propagation conditions

Parameter	Unit	Cell 1			
		T1	T2		
E-UTRA RF Channel Number		1			
BW _{channel}	MHz	10			
OCNG Pattern defined in					
A.3.2.2.1 (OP.1 TDD)		OP.1 TDD			
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
\hat{E}_{s}/I_{ot}	dB	4	4		
$N_{oc}^{$	dBm/15 kHz	-98			
\hat{E}_s/N_{oc}	dB	4	4		
RSRP Note 4	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94	-94		
Propagation Condition		AWGN			
Note 1: OCNG shall be used spectral density is acl		Il is fully allocated and a constant tota	al transmitted power		

spectral density is achieved for all OFDM symbols.

The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 2:

Interference from other cells and noise sources not specified in the test is assumed to be constant Note 3: over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{
m oc}$ to be

RSRP levels have been derived from other parameters for information purposes. They are not Note 4: settable parameters themselves.

Table A.6.3.2.1-3: Cell specific test parameters for cell #2 E-UTRAN TDD to UTRAN FDD RRC release with redirection under AWGN propagation conditions

Parameter	Unit	Cell 2			
		T1	T2		
UTRA RF Channel Number		1			
CPICH_Ec/lor	dB	-10			
PCCPCH_Ec/lor	dB	-12			
SCH_Ec/lor	dB	-12			
PICH_Ec/lor	dB	-15			
DPCH_Ec/lor	dB	N/A			
OCNS		-0.941			
\hat{I}_{or}/I_{oc}	dB	- 00	0.02		
I_{oc}	dBm/3.84 MHz	-70			
CPICH_Ec/Io ^{Note 3}	dB	-∞ -13			
Propagation Condition		AWGN			

Note 1: The DPCH level is controlled by the power control loop.

The power of the OCNS channel that is added shall make the total power from the cell to be equal Note 2: to Ior.

This gives an SCH Ec/lo of -15dB Note 3:

A.6.3.2.2 Test Requirements

The UE shall start to transmit random access to Cell 2 less than 650 ms from the beginning of time period T2.

The rate of correct RRC connection release redirection to UTRA FDD observed during repeated tests shall be at least 90%.

NOTE: The Re-establishment delay in this case can be expressed as

$$T_{connection_release_redirect_UTRA\;FDD} = T_{RRC_procedure_delay} + T_{identify_UTRA\;FDD} + T_{SI_UTRA\;FDD} + T_{RA}$$

where

 $T_{RRC_procedure_delay} = 110 \text{ ms}$

 $T_{identify-UTRA\ FDD} = 500\ ms$

 $T_{SI-UTRA\ FDD}$ = the time required for acquiring all the relevant system information of the target UTRA FDD cell. This time depends upon whether the UE is provided with the relevant system information of the target UTRA FDD cell or not by the E-UTRAN before the RRC connection is released. 0 ms is assumed in this test case.

 T_{RA} = The additional delay caused by the random access procedure. 40 ms is assumed in this test case.

This gives a total of 650 ms.

A.6.3.3 Redirection from E-UTRAN FDD to GERAN when System Information is provided

A.6.3.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs the RRC connection release with redirection from the E-UTRA FDD to the target GERAN cell within $T_{connection_release_redirect_GERAN}$. This test will partly verify the RRC connection release with redirection to GERAN requirements in clause 6.3.2.2.

The test parameters are given in Tables A.6.3.3.1-1, A.6.3.3.1-2 and A.6.3.3.1-3 below. No measurement gaps are configured. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. The start of T2 is the instant when the last TTI containing the RRC message, "RRCConnectionRelease", is received by the UE from cell 1. The "RRCConnectionRelease" message shall contain all the relevant system information of cell 2.

Table A.6.3.3.1-1: General test parameters for RRC connection release with redirection from E-UTRAN FDD to GERAN in AWGN

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement	As specified in clause A.3.1.1.1.
		Channel R.0 FDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.1.
(E-UTRAN FDD)		Channel R.6 FDD	
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on Absolute RF Channel Number 1
			(GSM cell)
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
DRX		OFF	
Monitored GSM cell list size		6 GSM neighbour including	GSM cells are provided in the
		ARFCN 1	"RRCConnectionRelease" message.
T1	S	5	
T2	S	2	

Table A.6.3.3.1-2: Cell specific test parameters for E-UTRA FDD cell (cell #1) for RRC connection release with redirection from E-UTRAN FDD to GERAN in AWGN

i i	Unit	Cell 1		
		T1	T2	
E-UTRA RF Channel Number		1		
BWchannel	MHz	10)	
OCNG Pattern defined in				
A.3.2.1.1 (OP.1 FDD)		OP.1	FDD	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB			
PDCCH_RA	dB	0		
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RANote 1	dB			
OCNG_RBNote 1	dB			
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	
\hat{E}_s/N_{oc}	dB	4	4	
N_{oc}	dBm/15 kHz	-9	8	
RSRP	dBm/15 kHz	-94	-94	
SCH_RP	dBm/15 kHz	-94	-94	
Propagation Condition		AWG	GN	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.6.3.3.1-3: Cell specific test parameters for GERAN cell (cell #2) for RRC connection release with redirection from E-UTRAN FDD to GERAN in AWGN

Parameter	Unit	Cell 2	
		T1	T2
Absolute RF Channel Number		AF	RFNC 1
RXLEV	dBm	-Infinity	-75
GSM BSIC		N/A	Valid

A.6.3.3.2 Test Requirements

The UE shall begin to send access bursts on RACH of the target GERAN cell (cell #2) less than 1120 ms from the beginning of time period T2.

The rate of correct "RRC connection release with redirection to GERAN" observed during repeated tests shall be at least 90%.

NOTE: The test requirement in this test case is expressed as:

 $T_{connection_release_redirect_GERAN} = T_{RRC_procedure_delay} + T_{identify_GERAN} + T_{SI_GERAN} + T_{RA}$

 $T_{RRC_procedure_delay} = 110$ ms, which is the time for processing the received message "RRCConnectionRelease."

 $T_{identify\text{-}GERAN} = 1000 \text{ ms}$, which is the time for identifying the target GERAN cell.

 $T_{SI\text{-}GERAN} = 0$; UE does not have to read the system information of the GERAN cell since all relevant SI is provided to the UE in the "RRCConnectionRelease" message.

 T_{RA} = 10 ms, which is about 2 GSM frames (2*4.65 ms) to account for the GSM timing uncertainty.

A.6.3.4 Redirection from E-UTRAN TDD to GERAN when System Information is provided

A.6.3.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs the RRC connection release with redirection from the E-UTRA TDD to the target GERAN cell within $T_{connection_release_redirect_GERAN}$. This test will partly verify the RRC connection release with redirection to GERAN requirements in clause 6.3.2.2.

The test parameters are given in Tables A.6.3.4.1-1, A.6.3.4.1-2 and A.6.3.4.1-3 below. No measurement gaps are configured. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. The start of T2 is the instant when the last TTI containing the RRC message, "RRCConnectionRelease", is received by the UE from cell 1. The "RRCConnectionRelease" message shall contain all the relevant system information of cell 2.

Table A.6.3.4.1-1: General test parameters for RRC connection release with redirection from E-UTRAN TDD to GERAN in AWGN

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement	As specified in clause A.3.1.1.2.
		Channel R.0 TDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.2.
(E-UTRAN TDD)		Channel R.6 TDD	
Active		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on Absolute RF Channel Number 1
			(GSM cell)
CP length		Normal	Applicable to cell 1
Special subframe configuration		6	As specified in table 4.2.1 in TS 36.211. The
		O	same configuration applies to all cells.
Uplink-downlink configuration		1	
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
DRX		OFF	
Monitored GSM cell list size		6 GSM neighbour including	GSM cells provided in the
		ARFCN 1	"RRCConnectionRelease" message.
T1	S	5	
T2	S	2	

Table A.6.3.4.1-2: Cell specific test parameters for E-UTRA TDD cell (cell #1) for RRC connection release with redirection from E-UTRAN TDD to GERAN in AWGN

	Unit	Cell 1		
		T1	T2	
E-UTRA RF Channel Number		1		
BW _{channel}	MHz	10	0	
OCNG Pattern defined in				
A.3.2.2.1 (OP.1 TDD)		OP.1	TDD	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	0	1	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	
\hat{E}_s/N_{oc}	dB	4	4	
N_{oc}	dBm/15 kHz	-9	8	
RSRP	dBm/15 kHz	-94	-94	
SCH_RP	dBm/15 kHz	-94	-94	
Propagation Condition		AW	GN	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.6.3.4.1-3: Cell specific test parameters for GERAN cell (cell #2) for RRC connection release with redirection from E-UTRAN TDD to GERAN in AWGN

Parameter	Unit	Cell 2	
		T1	T2
Absolute RF Channel Number		AF	RFNC 1
RXLEV	dBm	-Infinity	-75
GSM BSIC		N/A	Valid

A.6.3.4.2 Test Requirements

The UE shall begin to send access bursts on RACH of the target GERAN cell (cell #2) less than 1120 ms from the beginning of time period T2.

The rate of correct "RRC connection release with redirection to GERAN" observed during repeated tests shall be at least 90%.

NOTE: The test requirement in this test case is expressed as:

 $T_{connection_release_redirect_GERAN} = T_{RRC_procedure_delay} + T_{identify_GERAN} + T_{SI_GERAN} + T_{RA}$

 $T_{RRC_procedure_delay} = 110$ ms, which is the time for processing the received message "RRCConnectionRelease."

 $T_{identify\text{-}GERAN} = 1000 \text{ ms}$, which is the time for identifying the target GERAN cell.

A.6.3.5 E-UTRA TDD RRC connection release redirection to UTRA TDD

A.6.3.5.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs the RRC connection release with redirection from the E-UTRA TDD to the target UTRA TDD cell within $T_{connection_release_redirect_UTRA\ TDD}$. This test will partly verify the RRC connection release with redirection to UTRA TDD requirements in clause 6.3.2.3.

The test parameters are given in table A.6.3.5.1-1, table A.6.3.5.1-2, and table A.6.3.5.1-3. No measurement gaps are configured. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. The "RRCConnectionRelease" message containing the relevant system information of Cell 2 shall be sent to the UE during period T1 and the start of T2 is the instant when the last TTI containing the RRC message, "RRCConnectionRelease", is received by the UE from cell 1. The "RRCConnectionRelease" message shall contain all the relevant system information of Cell 2.

Table A.6.3.5.1-1: General test parameters for E-UTRA TDD RRC connection release redirection to UTRA TDD

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2.
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
Time offset between cells	ms	3	Asynchronous cells
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
CP length		Normal	Applicable to cell 1
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
Uplink-downlink configuration of cell 1		1	As specified in table 4.2-2 in TS 36.211
UTRA RF Channel Number		1	One UTRA TDD carrier frequency is used.
UTRA RF Channel Number		1	One UTRA TDD carrier frequency is used.
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA TDD cell list size		16	UTRA cells on UTRA RF channel 1 provided in the "RRCConnectionRelease" message from the E-UTRAN
T1	S	5	
T2	S	1	

Table A.6.3.5.1-2: Cell specific test parameters for cell 1 in E-UTRA TDD RRC connection release redirection to UTRA TDD test

Parameter	Unit	Cell 1	I			
		T1	T2			
E-UTRA RF Channel Number		1				
BW _{channel}	MHz	10				
OCNG Pattern defined in						
A.3.2.2.1 (OP.1 TDD)		OP.1 TI	DD			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB	0				
PHICH_RA	dB					
PHICH_RB	dB					
PDCCH_RA	dB					
PDCCH_RB	dB	1				
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
\hat{E}_{s}/I_{ot}	dB	4	4			
$N_{oc}^{ m Note 3}$	dBm/15 kHz	-98				
\hat{E}_s/N_{oc}	dB	4	4			
RSRP Note 4	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		AWGI	V			

- OCNG shall be used such that the cell is fully allocated and a constant total transmitted power Note 1: spectral density is achieved for all OFDM symbols.

 The resources for uplink transmission are assigned to the UE prior to the start of time period T2.
- Note 2:
- Interference from other cells and noise sources not specified in the test is assumed to be constant Note 3: over subcarriers and time and shall be modelled as AWGN of appropriate power for $\,N_{oc}\,$ to be
- RSRP levels have been derived from other parameters for information purposes. They are not Note 4: settable parameters themselves.

Table A.6.3.5.1-3: Cell specific test parameters for cell 2 in E-UTRA TDD RRC connection release redirection to UTRA TDD test

Parameter	Unit	Cell 2 (UTRA TDD)			
Timeslot Number		(0		PTS
		T1	T2	T1	T2
UTRA RF Channel Number Note1			Char	nel 1	
PCCPCH_Ec/lor	dB	-4.77	-4.77		
DwPCH_Ec/lor	dB			0	0
OCNS_Ec/lor ^{Note2}	dB	-1.76	-1.76		
\hat{I}_{or}/I_{oc}	dB	-inf	8	-inf	8
I_{oc}	dBm/1.28 MHz	-80			
PCCPCH RSCP Note3	dBm	-inf	-76.77	n.a.	n.a.
PCCPCH_Ec/Io Note3	dB	-inf	-5.41	n.a.	n.a.
DwPCH_Ec/Io Note3	dB	n.a.	n.a.	-inf	-0.64
Propagation Condition			AW	'GN	•

- Note 1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.
- Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or} .
- Note 3: P-CCPCH RSRP, PCCPCH_Ec/lo and DwPCH_Ec/lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.6.3.5.2 Test Requirements

The UE shall start to transmit the SYNCH-UL sequence in the UpPTS to Cell 2 less than 650 ms from the beginning of time period T2.

The rate of correct RRC connection release redirection to UTRA TDD observed during repeated tests shall be at least 90%.

NOTE: The time delay can be expressed as: $T_{RRC_procedure_delay} + T_{identify_UTRA\ TDD} + T_{SI_UTRA\ TDD} + T_{RA}$, where:

 $T_{RRC_procedure_delay} = 110$ ms, which is specified in clause 6.3.2.3.

 $T_{identify\text{-}UTRA\ TDD} = 500$ ms; which is defined in clause 6.3.2.3.

 $T_{SI\text{-}UTRA\ TDD} = 0$ ms, UE does not have to read the system information of the UTRAN TDD since all relevant SI is provided to the UE in the "RRCConnectionRelease" message.

 $T_{RA} = 40 \text{ms}$. This is the additional delay caused by the random access procedure

It gives a total delay of 650 ms.

A.6.3.6 E-UTRA FDD RRC connection release redirection to UTRA TDD

A.6.3.6.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs the RRC connection release with redirection from the E-UTRA FDD to the target UTRA TDD cell within $T_{connection_release_redirect_UTRA\ TDD}$. This test will partly verify the RRC connection release with redirection to UTRA TDD requirements in clause 6.3.2.3.

The test parameters are given in table A.6.3.6.1-1, table A.6.3.6.1-2, and table A.6.3.6.1-3. No measurement gaps are configured. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. The "RRCConnectionRelease" message containing the relevant system information of Cell 2 shall be sent to the UE during period T1 and the start of T2 is the instant when the last TTI containing the RRC message, "RRCConnectionRelease", is received by the UE from cell 1. The "RRCConnectionRelease" message shall contain all the relevant system information of Cell 2.

Table A.6.3.6.1-1: General test parameters for E-UTRA FDD RRC connection release redirection to UTRA TDD

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN		DL Reference Measurement	As specified in clause A.3.1.1.1.
FDD)		Channel R.0 FDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.1.
parameters (E-UTRAN FDD)		Channel R.6 FDD	
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number
			1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
Time offset between cells	ms	3	Asynchronous cells
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is
			used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA TDD cell list size		16	UTRA cells on UTRA RF channel 1
			provided in the "RRCConnectionRelease"
			message from the E-UTRAN
T1	S	5	
T2	S	1	

Table A.6.3.6.1-2: Cell specific test parameters for cell 1 in E-UTRA FDD RRC connection release redirection to UTRA TDD test

Unit	Cell	1			
	T1	T2			
	1				
MHz	10				
	OP 1 5	EDD			
	OF.11	-00			
dB					
dB					
dB					
dB					
dB	0				
dB					
dB	4	4			
dBm/15 kHz	-98	3			
dB	4	4			
dBm/15 kHz	-94	-94			
dBm/15 kHz	-94	-94			
	AWG	SN .			
	MHz dB	T1 MHz OP.1 F dB dB dB dB dB dB dB dB dB d			

- Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be
- Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.6.3.6.1-3: Cell specific test parameters for cell 2 in E-UTRA FDD RRC connection release redirection to UTRA TDD test

Parameter	Unit	Cell 2 (UTRA TDD)			
Timeslot Number		(0		PTS
		T1	T2	T1	T2
UTRA RF Channel Number Note1			Chan	nel 1	
PCCPCH_Ec/lor	dB	-4.77	-4.77		
DwPCH_Ec/lor	dB			0	0
OCNS_Ec/lor ^{Note2}	dB	-1.76	-1.76		
\hat{I}_{or}/I_{oc}	dB	-inf	8	-inf	8
I_{oc}	dBm/1.28 MHz	-80			
PCCPCH RSCP Note3	dBm	-inf	-76.77	n.a.	n.a.
PCCPCH_Ec/Io Note3	dB	-inf	-5.41	n.a.	n.a.
DwPCH_Ec/Io Note3	dB	n.a.	n.a.	-inf	-0.64
Propagation Condition			AW	GN	

- Note 1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.
- Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or} .
- Note 3: P-CCPCH RSRP, PCCPCH_Ec/lo and DwPCH_Ec/lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A. 6.3.6.2 Test Requirements

The UE shall start to transmit the SYNCH-UL sequence in the UpPTS to Cell 2 less than 650 ms from the beginning of time period T2.

The rate of correct RRC connection release redirection to UTRA TDD observed during repeated tests shall be at least 90%.

NOTE: The time delay can be expressed as: $T_{RRC\ procedure\ delay} + T_{identify-UTRA\ TDD} + T_{SI-UTRA\ TDD} + T_{RA}$, where:

 $T_{RRC_procedure_delay} = 110$ ms, which is specified in clause 6.3.2.3.

 $T_{identify-UTRA\ TDD} = 500$ ms; which is defined in clause 6.3.2.3.

 $T_{SI\text{-}UTRA\ TDD} = 0$ ms, UE does not have to read the system information of the UTRAN TDD since all relevant SI is provided to the UE in the "RRCConnectionRelease" message.

 $T_{RA} = 40 \text{ms}$. This is the additional delay caused by the random access procedure.

This gives a total delay of 650 ms.

A.6.3.7 E-UTRA TDD RRC connection release redirection to UTRA TDD without SI provided

A.6.3.7.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs the RRC connection release with redirection from the E-UTRA TDD to the target UTRA TDD cell within $T_{connection_release_redirect_UTRA\ TDD}$. This test will partly verify the RRC connection release with redirection to UTRA TDD requirements in clause 6.3.2.3.

The test parameters are given in table A.6.3.7.1-1, table A.6.3.7.1-2, and table A.6.3.7.1-3. No measurement gaps are configured. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. The "RRCConnectionRelease" message not containing the relevant system information of Cell 2 shall be sent to the UE during period T1 and the start of T2 is the instant when the last TTI containing the RRC message, "RRCConnectionRelease", is received by the UE from Cell 1.

Table A.6.3.7.1-1: General test parameters for E-UTRA TDD RRC connection release redirection to UTRA TDD without SI provided

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2.
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.2.
parameters (E-UTRAN TDD)		Channel R.6 TDD	
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number
			1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
Time offset between cells	ms	3	Asynchronous cells
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is
			used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
CP length		Normal	Applicable to cell 1
Uplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
UTRA RF Channel Number		1	One UTRA TDD carrier frequency is used.
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA TDD cell list size		none	No explicit neighbour list is provided to the UE
T1	S	5	
T2	S	2	

Table A.6.3.7.1-2: Cell specific test parameters for cell 1 in E-UTRA TDD RRC connection release redirection to UTRA TDD test without SI provided

Parameter	Unit	Cell	1			
		T1	T2			
E-UTRA RF Channel Number		1				
BW _{channel}	MHz	10				
OCNG Pattern defined in						
A.3.2.2.1 (OP.1 TDD)		OP.1 T	DD			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB	0				
PHICH_RB	dB					
PDCCH_RA	dB					
PDCCH_RB	dB	1				
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
\hat{E}_{s}/I_{ot}	dB	4	4			
$N_{oc}^{ m Note 3}$	dBm/15 kHz	-98				
\hat{E}_s/N_{oc}	dB	4	4			
RSRP Note 4	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		AWG	N			

- Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.
- Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled
- Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.6.3.7.1-3: Cell specific test parameters for cell 2 in E-UTRA TDD RRC connection release redirection to UTRA TDD test without SI provided

Parameter	Unit	Cell 2 (UTRA TDD)			
Timeslot Number		0 DwPTS		PTS	
		T1	T2	T1	T2
UTRA RF Channel Number Note1			Chan	nel 1	
PCCPCH_Ec/lor	dB	-4.77	-4.77		
DwPCH_Ec/lor	dB			0	0
OCNS_Ec/lor ^{Note2}	dB	-1.76	-1.76		
\hat{I}_{or}/I_{oc}	dB	-inf	8	-inf	8
I_{oc}	dBm/1.28 MHz	-80			
PCCPCH RSCP Note3	dBm	-inf	-76.77	n.a.	n.a.
PCCPCH_Ec/Io Note3	dB	-inf	-5.41	n.a.	n.a.
DwPCH_Ec/Io Note3	dB	n.a.	n.a.	-inf	-0.64
Propagation Condition			AW	GN	

Note 1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or} .

Note 3: P-CCPCH RSRP, PCCPCH_Ec/lo and DwPCH_Ec/lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.6.3.7.2 Test Requirements

The UE shall start to transmit the SYNCH-UL sequence in the UpPTS to Cell 2 less than 1930 ms from the beginning of time period T2.

The rate of correct RRC connection release redirection to UTRA TDD observed during repeated tests shall be at least 90%.

NOTE: The time delay can be expressed as: $T_{RRC\ procedure\ delay} + T_{identify-UTRA\ TDD} + T_{SI-UTRA\ TDD} + T_{RA}$, where:

 $T_{RRC_procedure_delay} = 110$ ms, which is specified in clause 6.3.2.3.

 $T_{identify-UTRA\ TDD} = 500$ ms; which is defined in clause 6.3.2.3.

T_{SI-UTRA TDD}: Maximum repetition period of relevant system info blocks that need to be received by the UE during RRC connection release redirection to UTRA TDD cell. 1280 ms is assumed in this test case.

 $T_{RA} = 40$ ms, this is the additional delay caused by the random access procedure.

This gives a total delay of 1930 ms.

A.6.3.8 E-UTRA FDD RRC connection release redirection to UTRA TDD without SI provided

A.6.3.8.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs the RRC connection release with redirection from the E-UTRA FDD to the target UTRA TDD cell within $T_{connection_release_redirect_UTRA\ TDD}$. This test will partly verify the RRC connection release with redirection to UTRA TDD requirements in clause 6.3.2.3.

The test parameters are given in table A.6.3.8.1-1, table A.6.3.8.1-2, and table A.6.3.8.1-3. No measurement gaps are configured. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. The "RRCConnectionRelease" message not containing the relevant system information of Cell 2 shall be sent to the UE during period T1 and the start of T2 is the instant when the last TTI containing the RRC message, "RRCConnectionRelease", is received by the UE from Cell 1.

Table A.6.3.8.1-1: General test parameters for E-UTRA FDD RRC connection release redirection to UTRA TDD without SI provided

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
Time offset between cells	ms	3	Asynchronous cells
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
CP length		Normal	Applicable to cell 1
UTRA RF Channel Number		1	One UTRA TDD carrier frequency is used.
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA TDD cell list size		none	No explicit neighbour list is provided to the UE
T1	S	5	
T2	S	2	

Table A.6.3.8.1-2: Cell specific test parameters for cell 1 in E-UTRA FDD RRC connection release redirection to UTRA TDD test without SI provided

Parameter	Unit	Cell	1			
		T1	T2			
E-UTRA RF Channel Number		1				
BW _{channel}	MHz	10				
OCNG Patterns defined in		OP.1 F	DD			
A.3.2.1.1 (OP.1 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB	0				
PHICH_RB	dB					
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
\hat{E}_{s}/I_{ot}	dB	4	4			
$N_{oc}^{ m Note 3}$	dBm/15 kHz	-98	3			
\hat{E}_s/N_{oc}	dB	4	4			
RSRP Note 4	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		AWG	SN			

- Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.
- Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled
- Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.6.3.8.1-3: Cell specific test parameters for cell 2 in E-UTRA FDD RRC connection release redirection to UTRA TDD test without SI provided

Parameter	Unit	Cell 2 (UTRA TDD)			
Timeslot Number		0		Dw	PTS
		T1	T2	T1	T2
UTRA RF Channel Number Note1			Char	nel 1	
PCCPCH_Ec/lor	dB	-4.77	-4.77		
DwPCH_Ec/lor	dB			0	0
OCNS_Ec/lor ^{Note2}	dB	-1.76	-1.76		
\hat{I}_{or}/I_{oc}	dB	-inf	8	-inf	8
I_{oc}	dBm/1.28 MHz	-80			
PCCPCH RSCP Note3	dBm	-inf	-76.77	n.a.	n.a.
PCCPCH_Ec/Io Note3	dB	-inf	-5.41	n.a.	n.a.
DwPCH_Ec/Io Note3	dB	n.a.	n.a.	-inf	-0.64
Propagation Condition			AW	'GN	•

- Note 1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.
- Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or} .
- Note 3: P-CCPCH RSRP, PCCPCH_Ec/lo and DwPCH_Ec/lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.6.3.8.2 Test Requirements

The UE shall start to transmit the SYNCH-UL sequence in the UpPTS to Cell 2 less than 1930 ms from the beginning of time period T2.

The rate of correct RRC connection release redirection to UTRA TDD observed during repeated tests shall be at least 90%.

NOTE: The time delay can be expressed as: $T_{RRC\ procedure\ delay} + T_{identify-UTRA\ TDD} + T_{SI-UTRA\ TDD} + T_{RA}$, where:

 $T_{RRC_procedure_delay} = 110$ ms, which is specified in clause 6.3.2.3.

 $T_{identify\text{-}UTRA\ TDD} = 500$ ms; which is defined in clause 6.3.2.3.

T_{SI-UTRA TDD}: Maximum repetition period of relevant system info blocks that need to be received by the UE during RRC connection release redirection to UTRA TDD cell. 1280 ms is assumed in this test case.

 $T_{RA} = 40$ ms, this is the additional delay caused by the random access procedure.

This gives a total delay of 1930 ms.

A.6.3.9 Redirection from E-UTRAN FDD to UTRAN FDD without System Information

A.6.3.9.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct performing the RRC connection release with redirection to the target UTRAN FDD cell. This test will partly verify the RRC connection release with redirection to UTRAN FDD cell requirements in clause 6.3.2.1.

The test parameters are given in Tables A.6.3.9.1-1, A.6.3.9.1-2 and A.6.3.9.1-3 below. The test consists of two successive time periods, with time duration of T1, and T2 respectively. The "RRCConnectionRelease" message not containing any system information of Cell 2 shall be sent to the UE during period T1. The start of T2 is the instant when the last TTI containing the RRC message is sent to the UE. Prior to time duration T2, the UE shall not have any timing information of Cell 2. Cell 2 is powered up at the beginning of the T2.

Table A.6.3.9.1-1: General test parameters for RRC Connection Release with Redirection from E-UTRAN FDD to UTRAN FDD under AWGN propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD) measurement quantity		CPICH Ec/lo	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
UTRA FDD cell list size		None	No explicit neighbour list is provided to the UE
T1	S	≤5	
T2	S	2	

Table A.6.3.9.1-2: Cell specific test parameters for cell #1 E-UTRAN FDD to UTRAN FDD RRC release with redirection under AWGN propagation conditions

Unit	Cell 1		
	T1	T2	
	1		
MHz	10		
	OP.1 F	FDD	
dB			
dB	0		
dB			
dB	4	4	
dBm/15 kHz	-98		
dB	4	4	
dBm/15 kHz	-94	-94	
dBm/15 kHz	-94	-94	
	AWG	BN	
	MHz dB	T1 MHz OP.1 F dB dB dB dB dB dB dB dB dB d	

- Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
- Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.6.3.9.1-3: Cell specific test parameters for cell #2 E-UTRAN FDD to UTRAN FDD RRC release with redirection under AWGN propagation conditions

Parameter	Unit	Cell 2			
		T1	T1		
UTRA RF Channel Number		1			
CPICH_Ec/lor	dB	-10			
PCCPCH_Ec/lor	dB	-12			
SCH_Ec/lor	dB	-12			
PICH_Ec/lor	dB	-15			
DPCH_Ec/lor	dB	N/A			
OCNS		-0.94	1		
\hat{I}_{or}/I_{oc}	dB	-∞	0.02		
I_{oc}	dBm/3.84 MHz	-70			
CPICH_Ec/Io ^{Note 3}	dB	-∞ -13			
Propagation Condition		AWGN			

Note 1: The DPCH level is controlled by the power control loop.

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal

το ι_{or}.

Note 3: This gives an SCH Ec/lo of -15dB

A.6.3.9.2 Test Requirements

The UE shall start to send random access to the target UTRA FDD cell (Cell 2) less than 1930 ms from the beginning of time period T2.

The rate of correct "RRC connection release with redirection to UTRAN" observed during repeated tests shall be at least 90%.

NOTE: The test requirement in this case can be expressed as

$$T_{connection_release_redirect_UTRA\;FDD} = T_{RRC_procedure_delay} + T_{identify_UTRA\;FDD} + T_{SI_UTRA\;FDD} + T_{RA}$$

where

 $T_{RRC procedure delay} = 110 \text{ ms}$

 $T_{identify-UTRA\ FDD} = 500\ ms$

 $T_{SI-UTRA\ FDD}$ = the time required for acquiring all the relevant system information of the target UTRA FDD cell. This time depends upon whether the UE is provided with the relevant system information of the target UTRA FDD cell or not by the E-UTRAN before the RRC connection is released. Since no SI is provided, 1280 ms is assumed in this test case.

 T_{RA} = The additional delay caused by the random access procedure. 40 ms is assumed in this test case.

This gives a total of 1930 ms.

A.6.3.10 Redirection from E-UTRAN FDD to GERAN when System Information is not provided

A.6.3.10.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs the RRC connection release with redirection from the E-UTRA FDD to the target GERAN cell within $T_{connection_release_redirect_GERAN}$. This test will partly verify the RRC connection release with redirection to GERAN requirements in clause 6.3.2.2.

The test parameters are given in Tables A.6.3.10.1-1, A.6.3.10.1-2 and A.6.3.10.1-3 below. No measurement gaps are configured. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. The start of T2 is the instant when the last TTI

containing the RRC message, "RRCConnectionRelease", is received by the UE from cell 1. The "RRCConnectionRelease" message shall not contain any system information of cell 2.

Table A.6.3.10.1-1: General test parameters for RRC connection release with redirection from E-UTRAN FDD to GERAN in AWGN

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement	As specified in clause A.3.1.1.1.
		Channel R.0 FDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.1.
(E-UTRAN FDD)		Channel R.6 FDD	
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on Absolute RF Channel Number 1
			(GSM cell)
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
DRX		OFF	
Monitored GSM cell list size		6 GSM neighbour including	Only the list of GERAN carrier frequencies is
		ARFCN 1	provided in the "RRCConnectionRelease"
			message.
T1	S	≤5	
T2	S	4	

Table A.6.3.10.1-2: Cell specific test parameters for E-UTRA FDD cell (cell #1) for RRC connection release with redirection from E-UTRAN FDD to GERAN in AWGN

Parameter	Unit	Cell 1		
		T1 T2		
E-UTRA RF Channel Number		1		
BW _{channel}	MHz	10		
OCNG Pattern defined in				
A.3.2.1.1 (OP.1 FDD)		OP.1 FDD		
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB	_		
PHICH_RB	dB	0		
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	dB	4 4		
\hat{E}_s/N_{oc}	dB	4 4		
N_{oc}	dBm/15 kHz	-98		
RSRP	dBm/15 kHz	-94 -94		
SCH_RP	dBm/15 kHz	-94 -94		
Propagation Condition		AWGN		

- Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
- Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.6.3.10.1-3: Cell specific test parameters for GERAN cell (cell #2) for RRC connection release with redirection from E-UTRAN FDD to GERAN in AWGN

Parameter	Unit	Cell 2		
		T1	T2	
Absolute RF Channel Number		ARFNC 1		
RXLEV	dBm	-Infinity	-75	
GSM BSIC		N/A	Valid	

A.6.3.10.2 Test Requirements

The UE shall begin to send access bursts on RACH of the target GERAN cell (cell #2) less than 3020 ms from the beginning of time period T2.

The rate of correct "RRC connection release with redirection to GERAN" observed during repeated tests shall be at least 90%.

NOTE: The test requirement in this test case is expressed as:

 $T_{connection_release_redirect_\ GERAN} = T_{RRC_procedure_delay} + T_{identify\text{-}GERAN} + T_{SI\text{-}GERAN} + T_{RA}$

 $T_{RRC_procedure_delay} = 110$ ms, which is the time for processing the received message "RRCConnectionRelease."

 $T_{identify-GERAN} = 1000$ ms, which is the time for identifying the target GERAN cell.

T_{SI-GERAN} = 1900 ms, which is the maximum time allowed to read BCCH data from the target GERAN cell.

 $T_{RA} = 10$ ms, which is about 2 GSM frames (2*4.65 ms) to account for the GSM timing uncertainty.

A.6.3.11 Redirection from E-UTRAN TDD to GERAN when System Information is not provided

A.6.3.11.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs the RRC connection release with redirection from the E-UTRA TDD to the target GERAN cell within $T_{connection_release_redirect_GERAN}$. This test will partly verify the RRC connection release with redirection to GERAN requirements in clause 6.3.2.2.

The test parameters are given in Tables A.6.3.11.1-1, A.6.3.11.1-2 and A.6.3.11.1-3 below. No measurement gaps are configured. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. The start of T2 is the instant when the last TTI containing the RRC message, "RRCConnectionRelease", is received by the UE from cell 1. The "RRCConnectionRelease" message shall not contain any system information of cell 2.

Table A.6.3.11.1-1: General test parameters for RRC connection release with redirection from E-UTRAN TDD to GERAN in AWGN

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2.
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2.
Active		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on Absolute RF Channel Number 1 (GSM cell)
CP length		Normal	Applicable to cell 1
Special subframe configuration		6	As specified in table 4.2.1 in TS 36.211. The same configuration applies to all cells.
Uplink-downlink configuration		1	
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
DRX		OFF	
Monitored GSM cell list size		6 GSM neighbour including ARFCN 1	Only the list of GERAN carrier frequencies is provided in the "RRCConnectionRelease" message.
T1	S	≤5	
T2	S	4	

Table A.6.3.11.1-2: Cell specific test parameters for E-UTRA TDD cell (cell #1) for RRC connection release with redirection from E-UTRAN TDD to GERAN in AWGN

Parameter	Unit	Cell 1		
		T1	T2	
E-UTRA RF Channel Number		1		
BW _{channel}	MHz	10		
OCNG Pattern defined in				
A.3.2.2.1 (OP.1 TDD)		OP.1 7	ΓDD	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB	_		
PHICH_RB	dB	0		
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
\hat{E}_{s}/I_{ot}	dB	4	4	
\hat{E}_s/N_{oc}	dB	4	4	
N_{oc}	dBm/15 kHz	-98	3	
RSRP	dBm/15 kHz	-94	-94	
SCH_RP	dBm/15 kHz	-94	-94	
Propagation Condition		AWGN		

Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.6.3.11.1-3: Cell specific test parameters for GERAN cell (cell #2) for RRC connection release with redirection from E-UTRAN TDD to GERAN in AWGN

Parameter	Unit	Cell 2		
		T1	T2	
Absolute RF Channel Number		ARFNC 1		
RXLEV	dBm	-Infinity	-75	
GSM BSIC		N/A	Valid	

A.6.3.11.2 Test Requirements

The UE shall begin to send access bursts on RACH of the target GERAN cell (cell #2) less than 3020 ms from the beginning of time period T2.

The rate of correct "RRC connection release with redirection to GERAN" observed during repeated tests shall be at least 90%.

NOTE: The test requirement in this test case is expressed as:

 $T_{connection_release_redirect_\ GERAN} = T_{RRC_procedure_delay} + T_{identify\text{-}GERAN} + T_{SI\text{-}GERAN} + T_{RA}$

 $T_{RRC_procedure_delay} = 110$ ms, which is the time for processing the received message "RRCConnectionRelease."

 $T_{identify-GERAN} = 1000$ ms, which is the time for identifying the target GERAN cell.

T_{SI-GERAN} = 1900 ms, which is the maximum time allowed to read BCCH data from the target GERAN cell.

 $T_{RA} = 10$ ms, which is about 2 GSM frames (2*4.65 ms) to account for the GSM timing uncertainty.

A.6.3.12 E-UTRAN TDD RRC connection release redirection to UTRAN FDD without SI provided

A.6.3.12.1 Test Purpose and Environment

The purpose of this test is to verify that the UE performs the RRC connection release with redirection from the E-UTRAN TDD to the target UTRAN FDD cell within $T_{connection_release_redirect_UTRAN\ FDD}$. This test will partly verify the RRC connection release with redirection to UTRAN FDD requirements in clause 6.3.2.1.

The test parameters are given in table A.6.3.12.1-1, table A.6.3.12.1-2, and table A.6.3.12.1-3. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. The "RRCConnectionRelease" message not containing any system information of Cell 2 shall be sent to the UE during period T1. The start of T2 is the instant when the last TTI containing the RRC message, "RRCConnectionRelease", is received by the UE from Cell 1.

Table A.6.3.12.1-1: General test parameters for E-UTRAN TDD RRC connection release redirection to UTRAN FDD without SI provided

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2.
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.2.
parameters (E-UTRAN TDD)		Channel R.6 TDD	
Active cell		Cell 1	Cell 1 is on E-UTRAN RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRAN RF channel number 1.
E-UTRAN RF Channel Number		1	One E-UTRAN TDD carrier frequency is used.
E-UTRAN Channel Bandwidth (BW _{channel})	MHz	10	
Uplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
CP length		Normal	Applicable to cell 1
UTRAN RF Channel Number		1	One UTRAN TDD carrier frequency is used.
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRAN FDD cell list size		None	No explicit neighbour list is provided to the UE
T1	S	≤5	
T2	S	2	

Table A.6.3.12.1-2: Cell specific test parameters for cell 1 in E-UTRAN TDD RRC connection release redirection to UTRAN FDD test without SI provided

Parameter	Unit	Cell 1		
		T1	T2	
E-UTRAN RF Channel		1		
Number				
BW _{channel}	MHz	10		
OCNG Pattern defined in		OP.1 T	-DD	
A.3.2.2.1 (OP.1 TDD)		OP.11	DD	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	0		
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
\hat{E}_{s}/I_{ot}	dB	4	4	
N _{oc} Note 3	dBm/15 kHz	-98		
\hat{E}_s/N_{oc}	dB	4	4	
RSRP Note 4	dBm/15 kHz	-94	-94	
SCH_RP	dBm/15 kHz	-94	-94	
Propagation Condition		AWG	SN .	
Note 1: OCNG shall be use	ad such that the call is	fully allocated and a constant	total transmitted nower	

- Note 1: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.
- Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
- Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.6.3.12.1-3: Cell specific test parameters for cell 2 in E-UTRAN TDD RRC connection release redirection to UTRAN FDD test without SI provided

Parameter	Unit	Cell 2			
		T1	T1		
UTRAN RF Channel Number		1			
CPICH_Ec/lor	dB	-10			
PCCPCH_Ec/lor	dB	-12			
SCH_Ec/lor	dB	-12			
PICH_Ec/lor	dB	-15			
DPCH_Ec/lor	dB	N/A			
OCNS		-0.94	1		
\hat{I}_{or}/I_{oc}	dB	-∞	0.02		
I_{oc}	dBm/3.84 MHz	-70			
CPICH_Ec/Io ^{Note 3}	dB	-∞ -13			
Propagation Condition		AWGN			

Note 1: The DPCH level is controlled by the power control loop.

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or} .

Note 3: This gives an SCH Ec/lo of -15dB

A.6.3.12.2 Test Requirements

The UE shall start to send random access to the target UTRAN FDD cell (Cell 2) less than 1930 ms from the beginning of time period T2.

The rate of correct RRC connection release redirection to UTRAN FDD observed during repeated tests shall be at least 90%.

NOTE: The time delay can be expressed as: $T_{RRC_procedure_delay} + T_{identify_UTRAN\ FDD} + T_{SI_UTRAN\ FDD} + T_{RA}$, where:

 $T_{RRC\ procedure\ delay} = 110$ ms, which is specified in clause 6.3.2.1.

 $T_{identify-UTRAN \, FDD} = 500 \, ms$; which is defined in clause 6.3.2.1.

 $T_{SI\text{-}UTRAN\ FDD}$: Maximum repetition period of relevant system info blocks that need to be received by the UE during RRC connection release redirection to UTRAN FDD cell. 1280 ms is assumed in this test case.

 $T_{RA} = 40$ ms, this is the additional delay caused by the random access procedure.

This gives a total delay of 1930 ms.

A.7 Timing and Signalling Characteristics

A.7.1 UE Transmit Timing

A.7.1.1 E-UTRAN FDD – UE Transmit Timing Accuracy Tests

A.7.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE is capable of following the frame timing change of the connected eNode B and that the UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are within the specified limits. This test will verify the requirements in clause 7.1.2.

For this test a single cell is used. Table A.7.1.1.1-1 defines the strength of the transmitted signals and the propagation condition. The transmit timing is verified by the UE transmitting SRS using the configuration defined in Table A.7.1.1.1-2.

Table A.7.1.1.1: Test Parameters for UE Transmit Timing Accuracy Tests for E-UTRAN FDD

Barrandar	11-2	Value			
Parameter	Unit	Test 1	Test 2	Test 3	Test 4
E-UTRA RF Channel Number		1	1	1	1
Channel Bandwidth (BW _{channel})	MHz	10	10	1.4	10
DRX cycle	ms	N/A	80 ^{Note5}	N/A	640 ^{Note5}
PDCCH/PCFICH/PHICH					
Reference measurement channel Nates		R.6 FDD	R.6 FDD	R.8 FDD	R.6 FDD
OCNG Pattern ^{Note2}		OP.2 FDD	OP.2 FDD	OP.4 FDD	OP.2 FDD
PBCH_RA					
PBCH_RB					
PSS_RA					
SSS_RA					
PCFICH_RB					
PHICH_RA	dB	0	0	0	0
PHICH_RB					
PDCCH_RA					
PDCCH_RB					
OCNG_RA ^{Note3}					
OCNG_RB ^{Note3}	1				
N_{oc}	dBm/15 kHz	-98	-98	-98	-98
$\hat{\mathtt{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	3	3	3	3
\hat{E}_s/N_{oc}	dB	3	3	3	3
lo ^{Note4}	dBm/9 MHz	-65.5	-65.5	N/A	-65.5
	dBm/1.08 MHz	N/A	N/A	-74.7	N/A
Propagation condition	-	AWGN	AWGN	AWGN	AWGN

Note 1: For the reference measurement channels, see clause A.3.1.

Note 2: For the OCNG pattern, see clause A.3.2.

Note 3: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: lo level has been derived from other parameters for information purpose. It is not a settable

Note 5: DRX related parameters are defined in Table A.7.1.1-3.

Table A.7.1.1.1-2: Sounding Reference Symbol Configuration to be used in UE Transmit Timing Accuracy Tests for E-UTRAN FDD

	Comment			
Test 1	Test 2	Test 3	Test 4	Comment
bw5	bw5	bw7	bw5	
sc1	sc3	sc1	sc3	
FALSE	FALSE	FALSE	FALSE	
N/A	N/A	N/A	N/A	Not applicable for FDD
0	0	0	0	No hopping
hbw0	hbw0	hbw0	hbw0	
0	0	0	0	
TRUE	TRUE	TRUE	TRUE	Indefinite duration
0	77	0	317	SRS periodicity of 2ms, 80 ms and 320ms for Test 1, 2 and 4, respectively.
0	0	0	0	
cs0	cs0	cs0	cs0	No cyclic shift
an1 Number of antenna ports used for SRS transmission				
	bw5 sc1 FALSE N/A 0 hbw0 0 TRUE 0 cs0	Test 1 Test 2 bw5 bw5 sc1 sc3 FALSE FALSE N/A N/A 0 0 hbw0 hbw0 0 TRUE TRUE TRUE 0 0 cs0 cs0	bw5 bw5 bw7 sc1 sc3 sc1 FALSE FALSE FALSE N/A N/A N/A 0 0 0 hbw0 hbw0 hbw0 0 0 0 TRUE TRUE TRUE 0 77 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <t< td=""><td>Test 1 Test 2 Test 3 Test 4 bw5 bw5 bw7 bw5 sc1 sc3 sc1 sc3 FALSE FALSE FALSE FALSE N/A N/A N/A N/A 0 0 0 0 hbw0 hbw0 hbw0 hbw0 0 0 0 0 TRUE TRUE TRUE TRUE 0 77 0 317 0 0 0 0 cs0 cs0 cs0 cs0</td></t<>	Test 1 Test 2 Test 3 Test 4 bw5 bw5 bw7 bw5 sc1 sc3 sc1 sc3 FALSE FALSE FALSE FALSE N/A N/A N/A N/A 0 0 0 0 hbw0 hbw0 hbw0 hbw0 0 0 0 0 TRUE TRUE TRUE TRUE 0 77 0 317 0 0 0 0 cs0 cs0 cs0 cs0

Table A.7.1.1.1-3: drx-Configuration to be used in UE Transmit Timing Accuracy Test 2 and Test 4 for E-UTRAN FDD

Field	Va	lue	Comment					
rieid	Test 2	Test 4						
onDurationTimer	psf1	psf1						
drx-InactivityTimer	psf1	psf1						
drx-RetransmissionTimer	psf1	psf1						
longDRX-CycleStartOffset	sf80	sf640						
shortDRX	disable	disable						
Note: For further information see clause 6.3.2 in TS 36.331.								

A.7.1.1.2 Test Requirements

For parameters specified in Tables A.7.1.1.1-1 and A.7.1.1.1-2, the initial transmit timing accuracy, the maximum amount of timing change in one adjustment, the minimum and the maximum adjustment rate shall be within the limits defined in clause 7.1.2.

The following sequence of events shall be used to verify that the requirements are met.

For the 10MHz channel bandwidth, the test sequence shall be carried out in RRC_CONNECTED for both non-DRX (for Test1) and DRX with a cycle length of 80 ms or a cycle length of 640 ms (Tests 2 and 4, respectively):

- a) After a connection is set up with the cell, the test system shall verify that the UE transmit timing offset is within $N_{TA} \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- b) The test system adjusts the downlink transmit timing for the cell by $+64 \times T_S$ (for Test 1 and Test 2) or $+32 \times T_S$ (for Test 4) compared to that in (a).
- c) The test system shall verify that for Test 1 the adjustment step size and the adjustment rate shall be according to the requirements in clause 7.1.2 until the UE transmit timing offset is within $N_{TA} \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1. Skip this step for Test 2 and Test 4.

d) The test system shall verify that the UE transmit timing offset stays within $N_{TA} \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1. For test 2 and test 4 the UE transmit timing offset shall be verified for the first transmission in the DRX cycle immediately after DL timing adjustment.

For the 1.4MHz channel bandwidth, the test sequence shall be carried out in RRC_CONNECTED for non-DRX (Test 3):

- a) After a connection is set up with the cell, the test system shall verify that the UE transmit timing offset is within $N_{TA} \times T_S \pm 24 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- b) The test system adjusts the downlink transmit timing for the cell by $+128 \times T_S$ (approximately $+4\mu s$) compared to that in (a).
- c) The test system shall verify that the adjustment step size and the adjustment rate shall be according to the requirements in clause 7.1.2 until the UE transmit timing offset is within $N_{TA} \times T_S \pm 24 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- d) The test system shall verify that the UE transmit timing offset stays within $N_{TA} \times T_S \pm 24 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.

A.7.1.2 E-UTRAN TDD - UE Transmit Timing Accuracy Tests

A.7.1.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE is capable of following the frame timing change of the connected eNode B and that the UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are within the specified limits. This test will verify the requirements in clause 7.1.2.

For this test a single cell is used. Table A.7.1.2.1-1 defines the strength of the transmitted signals and the propagation condition. The transmit timing is verified by the UE transmitting SRS using the configuration defined in Table A.7.1.2.1-2.

Table A.7.1.2.1-1: Test Parameters for UE Transmit Timing Accuracy Tests for E-UTRAN TDD

Dovementer	l lm!4	Value						
Parameter	Unit	Test 1	Test 2	Test 3	Test 4			
E-UTRA RF Channel Number		1	1	1	1			
Channel Bandwidth (BW _{channel})	MHz	10	10	1.4	10			
Special subframe		6	6	6	6			
configuration Note1								
Uplink-downlink configuration Note2		1	1	1	1			
DRX cycle	ms	N/A	80 ^{Note7}	N/A	640 ^{Note7}			
PDCCH/PCFICH/PHICH								
Reference measurement		R.6 TDD	R.6 TDD	R.8 TDD	R.6 TDD			
channel ^{Note3}								
OCNG Pattern ^{Note4}		OP.2 TDD	OP.2 TDD	OP.4 TDD	OP.2 TDD			
PBCH_RA	dB	0	0	0	0			
PBCH_RB								
PSS_RA								
SSS_RA								
PCFICH_RB								
PHICH_RA		0	0	0	0			
PHICH_RB		U	U	0	U			
PDCCH_RA								
PDCCH_RB								
OCNG_RA ^{Note5}								
OCNG_RB ^{Note5}								
N_{oc}	dBm/15 kHz	-98	-98	-98	-98			
\hat{E}_{s}/I_{ot}	dB	3	3	3	3			
\hat{E}_s/N_{oc}	dB	3	3	3	3			
lo ^{Note6}	dBm/9 MHz	-65.5	-65.5	N/A	-65.5			
IU	dBm/1. 08 MHz	N/A	N/A	-74.7	N/A			
Propagation condition	-	AWGN	AWGN	AWGN	AWGN			

Note 1: For the special subframe configuration see table 4.2-1 in TS 36.211.

Note 2: For the uplink-downlink configuration see table 4.2-2 in TS 36.211.

Note 3: For the reference measurement channels, see clause A.3.1.

Note 4: For the OCNG pattern, see clause A.3.2.

Note 5: OCNG shall be used such that both cells are fully allocated and a constant total transmitted

power spectral density is achieved for all OFDM symbols.

Note 6: lo level has been derived from other parameters for information purpose. It is not a

settable parameter.

Note 7: DRX related parameters are defined in Table A.7.1.2.1-3.

Table A.7.1.2.1-2: Sounding Reference Symbol Configuration to be used in UE Transmit Timing Accuracy Tests for E-UTRAN TDD

Field		Va	0				
Field	Test 1	Test 1 Test 2 Test 3 Test 4		Test 4	- Comment		
srsBandwidthConfiguration	bw5	bw5	bw7	bw5			
srsSubframeConfiguration	sc3	sc3	sc3	sc3	Once every 5 subframes		
ackNackSrsSimultaneousTr ansmission	FALSE	FALSE	FALSE	FALSE			
srsMaxUpPTS	FALSE	FALSE	FALSE	FALSE			
srsBandwidth	0	0	0	0	No hopping		
srsHoppingBandwidth	hbw0	hbw0	hbw0	hbw0			
frequencyDomainPosition	0	0	0	0			
duration	TRUE	TRUE	TRUE	TRUE	Indefinite duration		
Srs-ConfigurationIndex	15	85	15	325	SRS periodicity of 10, 80, 10 and 320 ms for Test 1, 2, 3 and 4 respectively.		
transmissionComb	0	0	0	0			
cyclicShift	cs0	cs0	cs0	cs0	No cyclic shift		
SRS-AntennaPort		aı	Number of antenna ports used for SRS transmission				
Note: For further information see clause 6.3.2 in TS 36.331.							

Table A.7.1.2.1-3: DRX Configuration to be used in UE Transmit Timing Accuracy Test 2 and Test 4 for E-UTRAN TDD

Field	Va	lue	Comment				
rieid	Test 2	Test 4					
onDurationTimer	psf1	psf1					
drx-InactivityTimer	psf1	psf1					
drx-RetransmissionTimer	psf1	psf1					
longDRX-CycleStartOffset	sf80	Sf640					
shortDRX	disable	disable					
Note: For further information see clause 6.3.2 in TS 36.331.							

A.7.1.2.2 Test Requirements

For parameters specified in Tables A.7.1.2.1-1 and A.7.1.2.1-2, the initial transmit timing accuracy, the maximum amount of timing change in one adjustment, the minimum and the maximum adjustment rate shall be within the limits defined in clause 7.1.2.

The following sequence of events shall be used to verify that the requirements are met.

For the 10MHz channel bandwidth, the test sequence shall be carried out in RRC_CONNECTED for both non-DRX (for Test1) and DRX with a cycle length of 80 ms or a cycle length of 640 ms (Tests 2 and 4, respectively):

- a) After a connection is set up with the cell, the test system shall verify that the UE transmit timing offset is within $(N_{TA} + 624) \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- b) The test system adjusts the downlink transmit timing for the cell by $+64 \times T_S$ (for Test 1 and Test 2) or $+32 \times T_S$ (for Test 4) compared to that in (a).
- c) The test system shall verify that for test 1 the adjustment step size and the adjustment rate shall be according to the requirements in clause 7.1.2 until the UE transmit timing offset is within $(N_{TA} + 624) \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1. Skip this step for test 2 and test 4.
- d) The test system shall verify that the UE transmit timing offset stays within $(N_{TA} + 624) \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1. For test 2 and test 4 the UE

transmit timing offset shall be verified for the first transmission in the DRX cycle immediately after DL timing adjustment.

For the 1.4MHz channel bandwidth, the test sequence shall be carried out in RRC_CONNECTED for non-DRX (Test 3):

- a) After a connection is set up with the cell, the test system shall verify that the UE transmit timing offset is within $(N_{TA} + 624) \times T_S \pm 24 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- b) The test system adjusts the downlink transmit timing for the cell by $+128 \times T_S$ (approximately $+4\mu s$) compared to that in (a).
- c) The test system shall verify that the adjustment step size and the adjustment rate shall be according to the requirements in clause 7.1.2 until the UE transmit timing offset is within $(N_{TA}+624)\times T_S\pm 24\times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- d) The test system shall verify that the UE transmit timing offset stays within $(N_{TA} + 624) \times T_S \pm 24 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.

A.7.1.3 E-UTRAN FDD – UE Transmit Timing Accuracy Tests for SCell

A.7.1.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE is capable of following the frame timing change of the connected eNode B and that the UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are within the specified limits. This test will verify the requirements in clause 7.1.2.

For this test two cells are used. Cell 1 is PCell and Cell 2 is SCell. Both PCell and SCell are in the primary Timing Advance Group (pTAG). Table A.7.1.3.1-1 defines the strength of the transmitted signals and the propagation condition. The transmit timing is verified by the UE transmitting SRS using the configuration defined in Table A.7.1.3.1-2.

Table A.7.1.3.1-1: General test Parameters for UE Transmit Timing Accuracy Tests for E-UTRAN FDD

Donomotor	I Imit		Cell 1		Cell 2			
Parameter	Unit	Test 1	Test 2	Test 3	Test 1	Test 2	Test 3	
E-UTRA RF Channel Number		1	1	1	2	2	2	
Channel Bandwidth (BW _{channel})	MHz	20	20	20	20	20	20	
Active PCell		Cell 1	Cell 1	Cell 1				
Active SCell					Cell 2	Cell 2	Cell 2	
TAG configuration		pTAG	pTAG	pTAG	pTAG	pTAG	pTAG	
DRX cycle	ms	N/A	80 ^{Note5}	640 ^{Note5}	N/A	80 ^{Note5}	640 ^{Note5}	
PDCCH/PCFICH/PHICH Reference measurement channel ^{Note1}		R.10 FDD	R.10 FDD	R.10 FDD	R.10 FDD	R.10 FDD	R.10 FDD	
OCNG Pattern ^{Note2}		OP.12 FDD	OP.12 FDD	OP.12 FDD	OP.12 FDD	OP.12 FDD	OP.12 FDD	
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RA PDCCH_RB OCNG_RA OCNG_RB OCNG_RB	dB	0	0	0	0	0	0	
N_{oc}	dBm/15 kHz	-98	-98	-98	-98	-98	-98	
\hat{E}_{s}/I_{ot}	dB	3	3	3	3	3	3	
\hat{E}_s/N_{oc}	dB	3	3	3	3	3	3	
Io ^{Note4}	dBm/18 MHz	-62.5	-62.5	-62.5	-62.5	-62.5	-62.5	
Propagation condition	-	AWGN	AWGN	AWGN	AWGN	AWGN	AWGN	

Note 1: For the reference measurement channels, see clause A.3.1.

Note 2: For the OCNG pattern, see clause A.3.2.

Note 3: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: lo level has been derived from other parameters for information purpose. It is not a settable parameter.

Note 5: DRX related parameters are defined in Table A.7.1.3.1-3.

Table A.7.1.3.1-2: Sounding Reference Symbol Configuration to be used in UE Transmit Timing Accuracy Tests for E-UTRAN FDD

Field		Cell 1			Cell 2	Comment			
Field	Test 1	Test 2	Test 3	Test 1	Test 2	Test 3	Comment		
srsBandwidthConfiguratio n	bw5	bw5	bw5	bw5	bw5	bw5			
srsSubframeConfiguration	sc1	sc3	sc3	sc1	sc3	sc3			
ackNackSrsSimultaneous Transmission	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE			
srsMaxUpPTS	N/A	N/A	N/A	N/A	N/A	N/A	Not applicable for FDD		
srsBandwidth	0	0	0	0	0	0	No hopping		
srsHoppingBandwidth	hbw0	hbw0	hbw0	hbw0	hbw0	hbw0			
frequencyDomainPosition	0	0	0	0	0	0			
duration	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	Indefinite duration		
Srs-ConfigurationIndex	0	77	317	0	77	317	SRS periodicity of 2ms, 80 ms and 320ms for Test 1, 2 and 3, respectively.		
transmissionComb	0	0	0	0	0	0			
cyclicShift	cs0	cs0	cs0	cs0	cs0	cs0	No cyclic shift		
srsAntennaPort	an1	an1	an1	an1	an1	an1	Number of SRS antenna ports		
NOTE: For further inform									

Table A.7.1.3.1-3: drx-Configuration to be used in UE Transmit Timing Accuracy Test 2 and Test 3 for E-UTRAN FDD

Field	Test 2		Test 3		Comment			
	Cell 1	Cell 2	Cell 1	Cell 2				
onDurationTimer	psf1	psf1	psf1	psf1				
drx-InactivityTimer	psf1	psf1	psf1	psf1				
drx-RetransmissionTimer	psf1	psf1	psf1	psf1				
IongDRX-CycleStartOffset	sf80	sf80	Sf640	Sf640				
shortDRX	disable	disable	disable	Disable				
NOTE: For further information see clause 6.3.2 in TS 36.331.								

A.7.1.3.2 Test Requirements

For parameters specified in Tables A.7.1.3.1-1, and A.7.1.3.1-2 the initial transmit timing accuracy, the maximum amount of timing change in one adjustment, the minimum and the maximum adjustment rate shall be within the limits defined in clause 7.1.2.

The following sequence of events shall be used to verify that the requirements are met.

The test sequence shall be carried out in RRC_CONNECTED for both non-DRX (for Test 1) and DRX with a cycle length of 80 ms or a cycle length of 640 mss(Test 2 and 3, respectively):

- a) After the SCell (Cell 2) is activated, the test system shall verify that the UE transmit timing offsets of both PCell and SCell are within $N_{TA} \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of PCell (Cell 1).
- b) The test system adjusts the downlink transmit timing for the PCell (Cell 1) by $+64 \times T_S$ (for Test 1 and Test 2) or $+32 \times T_S$ (for Test 3) compared to that in (a).
- c) The test system shall verify that for Test 1 the adjustment step size and the adjustment rate shall be according to the requirements in clause 7.1.2 until the UE transmit timing offsets of both PCell and SCell are within $N_{TA} \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of PCell (Cell 1). Skip this step for Test 2 and Test 3.

d) The test system shall verify that the UE transmit timing offsets of both PCell and SCell stay within $N_{TA} \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of PCell (Cell 1). For test 2 and test 3 the UE transmit timing offset shall be verified for the first transmission in the DRX cycle immediately after DL timing adjustment.

A.7.1.4 E-UTRAN TDD - UE Transmit Timing Accuracy Tests for SCell

A.7.1.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UE is capable of following the frame timing change of the connected eNode B and that the UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are within the specified limits. This test will verify the requirements in clause 7.1.2.

For this test two cells are used. Cell 1 is PCell and Cell 2 is SCell. Both PCell and SCell are in the primary Timing Advance Group (pTAG). Table A.7.1.4.1-1 defines the strength of the transmitted signals and the propagation condition. The transmit timing is verified by the UE transmitting SRS using the configuration defined in Table A.7.1.4.1-2.

Table A.7.1.4.1-1: Test Parameters for UE Transmit Timing Accuracy Tests for E-UTRAN TDD

Downwater	l lmi4	Cell 1				Cell 2	
Parameter	Unit	Test 1	Test 2	Test 3	Test 1	Test 2	Test 3
E-UTRA RF Channel Number		1	1	1	2	2	2
Channel Bandwidth (BW _{channel})	MHz	20	20	20	20	20	20
E-UTRA RF Channel Number		1	1	1	2	2	2
Active PCell		Cell 1	Cell 1	Cell 1			
Active SCell					Cell 2	Cell 2	Cell 2
TAG configuration		pTAG	pTAG	pTAG	pTAG	pTAG	pTAG
Special subframe		6	6	6	6	6	6
configuration ^{Note1}							
Uplink-downlink configuration Note2		1	1	1	1	1	1
DRX cycle	ms	OFF	80 ^{Note}	640 ^{Note} /	OFF	80 ^{Note} /	640 ^{Note7}
PDCCH/PCFICH/PHICH		R.10	R.10	R.10	R.10	R.10	R.10
Reference measurement		TDD	TDD	TDD	TDD	TDD	TDD
channel ^{Note3}		וטטו	100	100	100	100	100
OCNG Pattern ^{Note4}		OP.8	OP.8	OP.8	OP.8	OP.8	OP.8
		TDD	TDD	TDD	TDD	TDD	TDD
PBCH_RA	dB	0	0	0	0	0	0
PBCH_RB							
PSS_RA							
SSS_RA							
PCFICH_RB							
PHICH_RA		0	0	0		0	0
PHICH_RB		U	U	U		U	U
PDCCH_RA							
PDCCH_RB							
OCNG_RA ^{Note5}							
OCNG_RB ^{Note5}							
M	dBm/15	-98	-98	-98	-98	-98	-98
N_{oc}	kHz	-90	-90	-90	-90	-90	-90
$\hat{E}_{\scriptscriptstyle \mathrm{s}}/\mathrm{I}_{\scriptscriptstyle \mathrm{ot}}$	dB	3	3	3	3	3	3
\hat{E}_s/N_{oc}	dB	3	3	3	3	3	3
Io ^{Note6}	dBm/18 MHz	-62.5	-62.5	-62.5	-62.5	-62.5	-62.5
Propagation condition	-	AWGN	AWGN	AWGN	AWGN	AWGN	AWGN
Note 1: For the appoint subframe					/(00014	/(00014	/ () () ()

Note 1: For the special subframe configuration see table 4.2-1 in TS 36.211.

Note 2: For the uplink-downlink configuration see table 4.2-2 in TS 36.211.

Note 3: For the reference measurement channels, see clause A.3.1.

Note 4: For the OCNG pattern, see clause A.3.2.

Note 5: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 6: lo level has been derived from other parameters for information purpose. It is not a settable parameter.

Note 7: DRX related parameters are defined in Table A.7.1.4.1-3.

Table A.7.1.4.1-2: Sounding Reference Symbol Configuration to be used in UE Transmit Timing Accuracy Tests for E-UTRAN TDD

	Field		Cell 1				Cell 2			Comment		
	Field Test 1	T ēe sti 1	Test 2	Tes	t 3	Test 1	Test 2	Те	st 3	Tset	3	Tset3
srsBandv	vidthConfiguration	bw5	bw5	bw	/5	bw5	bw5	b	<i>N</i> 5			
srsSubfra	ameConfiguration	sc3	sc3	sc	:3	sc3	sc3	s	с3	Once every 5 subframes		
ackNacks Transmis	SrsSimultaneous sion	FALSE	FALSE	FAL	.SE	FALSE	FALSE	FA	LSE			
srsMaxU	pPTS	FALSE	FALSE	FAL	.SE	FALSE	FALSE	FA	LSE			
srsBandv	vidth	0	0	0)	0	0		0	No hopping		
srsHoppii	ngBandwidth	hbw0	hbw0	hbν	w0	hbw0	hbw0	hb	w0			
frequency	yDomainPosition	0	0	0)	0	0		0			
duration		TRUE	TRUE	TRI	UE	TRUE	TRUE	TR	UE	Indefinite duration		
Srs-Confi	igurationIndex	15	85	32	25	15	85	3	25	SRS periodicity of 10, 80 ms and 320ms for Test 1, 2 and 3, respectively.		
transmiss	sionComb	0	0	0)	0	0		0			
cyclicShif	ft	cs0	cs0	cs	0	cs0	cs0	С	s0	No cyclic shift		
srsAnteni	naPort	an1	an1	an	11	an1	an1	а	n1	Number of SRS antenna ports		
Note:	For further inform	ation see c	lause 6.3.2	2 in TS	36.3	331.						

Table A.7.1.4.1-3: DRX Configuration to be used in UE Transmit Timing Accuracy Test 2 and Test 3 for E-UTRAN TDD

Field	Tes	st 2	Tes	Comment					
rieid	Cell 1	Cell 2	Cell 1	Cell 2					
onDurationTimer	psf1	psf1	psf1	psf1					
drx-InactivityTimer	psf1	psf1	psf1	psf1					
drx-RetransmissionTimer	psf1	psf1	psf1	psf1					
longDRX-CycleStartOffset	sf80	sf80	Sf640	Sf640					
shortDRX	disable	disable	disable	disable					
Note: For further information	Note: For further information see clause 6.3.2 in TS 36.331.								

A.7.1.4.2 Test Requirements

For parameters specified in Tables A.7.1.4.1-1 and A.7.1.4.1-2, the initial transmit timing accuracy, the maximum amount of timing change in one adjustment, the minimum and the maximum adjustment rate shall be within the limits defined in clause 7.1.2.

The following sequence of events shall be used to verify that the requirements are met.

The test sequence shall be carried out in RRC_CONNECTED for both non-DRX (for Test 1) and DRX with a cycle length of 80 ms or a cycle length of 640 ms (Test 2 and 3, respectively):

- a) After the SCell (Cell 2) is activated, the test system shall verify that the UE transmit timing offsets of both PCell and SCell are within $(N_{TA}+624)\times T_S\pm 12\times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of PCell (Cell 1).
- b) The test system adjusts the downlink transmit timing for the PCell (Cell 1) by $+64\times T_S$ (for Test 1 and Test 2) or $+32\times T_S$ (for Test 3) compared to that in (a).
- c) The test system shall verify that for test 1 the adjustment step size and the adjustment rate shall be according to the requirements in clause 7.1.2 until the UE transmit timing offsets of both PCell and SCell are within $(N_{TA} + 624) \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of PCell (Cell 1). Skip this step for test 2 and test 3.

d) The test system shall verify that the UE transmit timing offsets of both PCell and SCell stay within (N_{TA} + 624)× T_S ± 12× T_S with respect to the first detected path (in time) of the corresponding downlink frame of PCell (Cell 1). For test 2 and test 3 the UE transmit timing offset shall be verified for the first transmission in the DRX cycle immediately after DL timing adjustment.

A.7.1.4A E-UTRAN TDD - UE Transmit Timing Accuracy Tests for SCell for 20 MHz + 10 MHz

A.7.1.4A.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.7.1.4.1.

The parameters of this test are the same as defined in Subclause A.7.1.4.1 except that the values of the parameters in the Table A.7.1.4A.1-1 will replace the values of the corresponding parameters in A.7.1.4.1-1. Parameters used for the sounding reference symbol configuration and DRX configuration are unchanged from table A.7.1.4.1-2 and table A.7.1.4.1-3.

Table A.7.1.4A.1-1: Test Parameters for UE Transmit Timing Accuracy Tests for E-UTRAN TDD for 20 MHz +10 MHz

Parameter	Unit		Cell 1		Cell 2			
Parameter	Offic	Test 1	Test 2	Test 3	Test 1	Test 2	Test 3	
Channel Bandwidth (BW _{channel})	MHz	20	20	20	10	10	10	
PDCCH/PCFICH/PHICH Reference measurement channel ^{Note3}		R.10 TDD	R.10 TDD	R.10 TDD	R.6 TDD	R.6 TDD	R.6 TDD	
OCNG Pattern ^{Note4}		OP.8 TDD	OP.8 TDD	OP.8 TDD	OP.2 TDD	OP.2 TDD	OP.2 TDD	
Io ^{Note6}	dBm/18 MHz	-62.5	-62.5	-62.5	N/A	N/A	N/A	
IO	dBm/9 MHz	N/A	N/A	N/A	-65.5	-65.5	-65.5	

A.7.1.4A.2 Test Requirements

The test requirements defined in section A.7.1.4.2 shall apply to this test case.

A.7.1.5 E-UTRAN FDD – UE Transmit Timing Accuracy Tests for 5MHz Bandwidth

A.7.1.5.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.7.1.1.1.

The parameters of this test are the same as defined in Subclause A.7.1.1.1 except that the values of the parameters in Test 1 in the Table A.7.1.5.1-1 will replace the values of the corresponding parameters in A.7.1.1.1-1. Only Test 1 is defined for the 5MHz bandwidth.

Table A.7.1.5.1-1: Test Parameters for UE Transmit Timing Accuracy Tests for E-UTRAN FDD for 5MHz bandwidth

Paramata.	l la it	Value
Parameter	Unit	Test 1
Channel Bandwidth (BW _{channel})	MHz	5
PDCCH/PCFICH/PHICH		
Reference measurement channel ^{Note1}		R.11 FDD
OCNG Pattern ^{Note2}		OP.16 FDD
Io ^{Note4}	dBm/4.5 MHz	-68.5

Note 1: For the reference measurement channels, see clause A.3.1.

Note 2: For the OCNG pattern, see clause A.3.2.

Note 3: See Table A.7.1.1.1-1 for the other parameters.

Note 4: This test is according to the principle defined in section A.3.7.2.

A.7.1.5.2 Test Requirements

The test requirements defined in section A.7.1.1.2 shall apply to this test case.

A.7.1.6 E-UTRAN FDD – UE Transmit Timing Accuracy Tests for SCell in sTAG

A.7.1.6.1 Test Purpose and Environment

The purpose of this test is to verify that the UE is capable of following the frame timing change of the connected eNode B and that the UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are within the specified limits for SCell in sTAG. This test will verify the requirements in clause 7.1.2.

For this test two cells are used. Cell 1 is PCell and Cell 2 is SCell. PCell is in the Primary Timing Advance Group (pTAG) and Scell is in the secondary Timing Advance Group (sTAG). Table A.7.1.6.1-1 defines the strength of the transmitted signals and the propagation condition. The transmit timing for Scell in sTAG is verified by the UE transmitting SRS using the configuration defined in Table A.7.1.6.1-2.

Table A.7.1.6.1-1: General test Parameters for UE Transmit Timing Accuracy Tests for Scell in sTAG for E-UTRAN FDD

Davamatav	l l mit	Се	Cell 1		12
Parameter	Unit	Test 1	Test 2	Test 1	Test 2
E-UTRA RF Channel Number		1	1	2	2
Channel Bandwidth (BW _{channel})	MHz	10	10	10	10
Active PCell		Cell 1	Cell 1		
Active SCell				Cell 2	Cell 2
TAG configuration		pTAG	pTAG	sTAG	sTAG
DRX cycle	ms	OFF	80 ^{Note5}	OFF	80 ^{Note5}
PDCCH/PCFICH/PHICH Reference measurement channel ^{Note1}		R.6 FDD	R.6 FDD	R.6 FDD	R.6 FDD
OCNG Pattern ^{Note2}		OP.2 FDD	OP.2 FDD	OP.2 FDD	OP.2 FDD
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RA PDCCH_RB OCNG_RA OCNG_RB POCNG_RB	dB	0	0	0	0
N_{oc}	dBm/15 kHz	-98	-98	-98	-98
\hat{E}_{s}/I_{ot}	dB	3	3	3	3
\hat{E}_s/N_{oc}	dB	3	3	3	3
Io ^{Note4}	dBm/9 MHz	-65.5	-65.5	-65.5	-65.5
Propagation condition	-	AWGN	AWGN	AWGN	AWGN

Note 1: For the reference measurement channels, see clause A.3.1.

Note 2: For the OCNG pattern, see clause A.3.2.

Note 3: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: lo level has been derived from other parameters for information purpose. It is not a settable parameter.

Note 5: DRX related parameters are defined in Table A.7.1.6.1-3.

Table A.7.1.6.1-2: Sounding Reference Symbol Configuration to be used in UE Transmit Timing Accuracy Tests for Scell in sTAG for E-UTRAN FDD

Field	Ce	Cell 1 Cell 2		Cell 1 Cell 2		Comment
Field	Test 1	Test 2	Test 1	Test 2		
srsBandwidthConfiguratio n	bw5	bw5	bw5	bw5		
srsSubframeConfiguration	sc3	sc3	sc3	sc3	Once every 5 subframes	
ackNackSrsSimultaneous Transmission	FALSE	FALSE	FALSE	FALSE		
srsMaxUpPTS	FALSE	FALSE	FALSE	FALSE		
srsBandwidth	0	0	0	0	No hopping	
srsHoppingBandwidth	hbw0	hbw0	hbw0	hbw0		
frequencyDomainPosition	0	0	0	0		
duration	TRUE	TRUE	TRUE	TRUE	Indefinite duration	
Srs-ConfigurationIndex	15	85	15	85	SRS periodicity of 10 and 80 ms for Test 1 and 2, respectively.	
transmissionComb	0	0	0	0		
cyclicShift	cs0	cs0	cs0	cs0	No cyclic shift	
srsAntennaPort	an1	an1	an1	an1	Number of SRS antenna ports	
Note: For further inform	ation see cla	ause 6.3.2 in	TS 36.331			

Table A.7.1.6.1-3: drx-Configuration to be used in Test 2 of UE Transmit Timing Accuracy for SCell in sTAG for E-UTRAN FDD

Field	Cell 1	Cell 2	Comment				
onDurationTimer	psf1	psf1					
drx-InactivityTimer	psf1	psf1					
drx-RetransmissionTimer	psf1	psf1					
longDRX-CycleStartOffset	sf80	sf80					
shortDRX	disable	disable					
Note: For further informa							

A.7.1.6.2 Test Requirements

For parameters specified in Tables A.7.1.6.1-1, and A.7.1.6.1-2 the initial transmit timing accuracy, the maximum amount of timing change in one adjustment, the minimum and the maximum adjustment rate for Scell in sTAG shall be within the limits defined in clause 7.1.2.

The following sequence of events shall be used to verify that the requirements are met.

For Test1 and Test2, the test sequence shall be carried out in RRC_CONNECTED for both non-DRX and DRX with a cycle length of 80 ms:

- a) After the SCell (Cell 2) is activated, the test system shall verify that the UE transmit timing offsets for SCell in sTAG are within $N_{TA} \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of the activated Scell.
- b) The test system adjusts the downlink transmit timing for the activated Scell (Cell 2) by $+64 \times T_S$ (approximately $+2\mu s$) compared to that in (a).
- c) The test system shall verify that for Test 1 the adjustment step size and the adjustment rate for Scell in sTAG shall be according to the requirements in clause 7.1.2 until the UE transmit timing offsets of SCell within $N_{TA} \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of the activated SCell (Cell 2). Skip this step for Test 2.
- d) The test system shall verify that the UE transmit timing offsets of the SCell in sTAG stay within $N_{TA} \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of the activated SCell (Cell 2).

A.7.1.7 E-UTRAN TDD - UE Transmit Timing Accuracy Tests for SCell in sTAG

A.7.1.7.1 Test Purpose and Environment

The purpose of this test is to verify that the UE is capable of following the frame timing change of the connected eNode B and that the UE initial transmit timing accuracy, maximum amount of timing change in one adjustment, minimum and maximum adjustment rate are within the specified limits for SCell in sTAG. This test will verify the requirements in clause 7.1.2.

For this test two cells are used. Cell 1 is PCell and Cell 2 is SCell. PCell is in the Primary Timing Advance Group (pTAG) and Scell is in the secondary Timing Advance Group (sTAG). Table A.7.1.7.1-1 defines the strength of the transmitted signals and the propagation condition. The transmit timing for Scell in sTAG is verified by the UE transmitting SRS using the configuration defined in Table A.7.1.7.1-2.

Table A.7.1.7.1-1: Test Parameters for UE Transmit Timing Accuracy Tests for Scell in sTAG for E-UTRAN TDD

E-UTRA RF Channel Number	
Channel Bandwidth (BW _{channel}) MHz 10 10 10 E-UTRA RF Channel Number 1 1 1 2 Active PCell Cell 1 Cell 1 Cell 2 Cell 2 Active SCell Cell 2 Cell 3 Cell 2 Cell 3 Cell 2 Cell 3 Cell 2 Cell 3 Cell 3 Cell 2 Cell 3 Cell 3 Cell 4 Cell 5 Cell 2 Cell 3 Cell 4 Cell 5 Cell 2 Cell 3 Cell 4 Cell 5 Cell 5 Cell 2 Cell 4 Cell 5 Cell 5 Cell 6 Ce	st 2
E-UTRA RF Channel Number	2
Active PCell	0
Active SCell	2
TAG configuration	
Special subframe configuration Special subframe Special subframe	ll 2
Configuration Note1	AG
Uplink-downlink configuration Note Note	3
Uplink-downlink configuration Notes DRX cycle ms	
DRX cycle	1
Reference measurement channel	lote7
channel Note3 OP.2 TDD OP.2 TDD <th< td=""><td></td></th<>	
OCNG Pattern Note4 OP.2 TDD OP.2 TDD <td>TDD</td>	TDD
OCNG Pattern Note4 OP.2 TDD OP.2 TDD <td></td>	
PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB OCNG_RANote5 OCNG_RBNote5 Noc dBm/15 kHz -98 -98 -98	TDD
PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB OCNG_RANote5 OCNG_RBNote5 Noc dBm/15 kHz -98 -98 -98)
SSS_RA	
PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB OCNG_RANOte5 OCNG_RBNote5 Noc dBm/15 kHz -98 -98 -98	
PHICH_RA 0 0 PHICH_RB 0 0 PDCCH_RA 0 0 PDCCH_RB 0 0 OCNG_RA OCNG_RA 0 OCNG_RB 0 0 OCNG_RB 0 0 Ac 0 0 C 0 0 C 0 0 C 0 0 C 0 0 C 0 0 C 0 0 C 0 0 C 0 0 C 0 0 C 0 0 C 0 0 C 0 0 C 0 0 C 0 0 C 0 0 C 0 0 C 0 0 C 0 0	
PHICH_RB 0 0 PDCCH_RA 0 0 PDCCH_RB 0 0 OCNG_RA OCNG_RA 0 OCNG_RA 0 0 OCNG_RB 0 0<	
PRICH_RB	0
PDCCH_RB	J
OCNG_RA ^{Note5} OCNG_RB ^{Note5} OCNG_RB ^{Note5} dBm/15 kHz -98 -98 -	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	
N_{oc} dBm/15 kHz -98 -98 -98 -98	
<u> </u>	98
$\hat{\mathbf{E}}_{_{\mathrm{s}}}/\mathbf{I}_{_{\mathrm{ot}}}$ dB 3 3	3
\hat{E}_s/N_{oc} dB 3 3	3
Io ^{Note6} dBm/965.565.565.56	5.5
Propagation condition - AWGN AWGN AWGN AV	'GN

Note 1: For the special subframe configuration see table 4.2-1 in TS 36.211.

Note 2: For the uplink-downlink configuration see table 4.2-2 in TS 36.211.

Note 3: For the reference measurement channels, see clause A.3.1.

Note 4: For the OCNG pattern, see clause A.3.2.

Note 5: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 6: lo level has been derived from other parameters for information purpose. It is not a settable parameter.

Note 7: DRX related parameters are defined in Table A.7.1.7.1-3.

Table A.7.1.7.1-2: Sounding Reference Symbol Configuration to be used in UE Transmit Timing Accuracy Tests for Scell in sTAG for E-UTRAN TDD

Field	Cell 1 Cell 2				Comment
Field	Test 1	Test 2	Test 1	Test 2	7
srsBandwidthConfiguratio n	bw5	bw5	bw5	bw5	
srsSubframeConfiguration	sc3	sc3	sc3	sc3	Once every 5 subframes
ackNackSrsSimultaneous Transmission	FALSE	FALSE	FALSE	FALSE	
srsMaxUpPTS	FALSE	FALSE	FALSE	FALSE	
srsBandwidth	0	0	0	0	No hopping
srsHoppingBandwidth	hbw0	hbw0	hbw0	hbw0	
frequencyDomainPosition	0	0	0	0	
duration	TRUE	TRUE	TRUE	TRUE	Indefinite duration
Srs-ConfigurationIndex	15	85	15	85	SRS periodicity of 10 and 80 ms for Test 1 and 2, respectively.
transmissionComb	0	0	0	0	
cyclicShift	cs0	cs0	cs0	cs0	No cyclic shift
srsAntennaPort	an1	an1	an1	an1	Number of SRS antenna ports
Note: For further inform	nation see claus	e 6.3.2 in TS	36.331.	•	

Table A.7.1.7.1-3: DRX Configuration to be used in Test 2 of UE Transmit Timing Accuracy for SCell in sTAG for E-UTRAN TDD

Field	Cell 1	Cell 2	Comment			
onDurationTimer	psf1	psf1				
drx-InactivityTimer	psf1	psf1				
drx-RetransmissionTimer	psf1	psf1				
longDRX-CycleStartOffset	sf80	sf80				
shortDRX	disable	disable				
Note: For further information see clause 6.3.2 in TS 36.331.						

A.7.1.7.2 Test Requirements

For parameters specified in Tables A.7.1.7.1-1 and A.7.1.7.1-2, the initial transmit timing accuracy, the maximum amount of timing change in one adjustment, the minimum and the maximum adjustment rate for Scell in sTAG shall be within the limits defined in clause 7.1.2.

The following sequence of events shall be used to verify that the requirements are met.

For Test 1 and Test 2, the test sequence shall be carried out in RRC_CONNECTED for both non-DRX and DRX with a cycle length of 80 ms:

- a) After the SCell (Cell 2) is activated, the test system shall verify that the UE transmit timing offsets for Scell in sTAG are within $(N_{TA} + 624) \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of the activated SCell (Cell 2).
- b) The test system adjusts the downlink transmit timing for the activated Scell (Cell 2) by $+64 \times T_S$ (approximately $+2\mu s$) compared to that in (a).
- c) The test system shall verify that for test 1 the adjustment step size and the adjustment rate for Scell in sTAG shall be according to the requirements in clause 7.1.2 until the UE transmit timing offsets of SCell are within $(N_{TA}+624)\times T_S\pm 12\times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of the activated SCell(Cell 2). Skip this step for test 2.

d) The test system shall verify that the UE transmit timing offsets of the SCell in sTAG stay within $(N_{TA} + 624) \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of the activated Scell (Cell 2).

A.7.1.7A E-UTRAN TDD - UE Transmit Timing Accuracy Tests for SCell in sTAG for 20MHz +20MHz

A.7.1.7A.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.7.1.7. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.7.1.7B.1.1-1 will replace the values of corresponding parameters in Tables A.7.1.7.1-1.

Table A.7.1.7A.1-1: Test Parameters for UE Transmit Timing Accuracy Tests for Scell in sTAG for E-UTRAN TDD with 20MHz +20MHz bandwidth

Parameter	Unit	С	ell 1	C	cell 2
Parameter	Onit	Test 1 Test 2		Test 1	Test 2
E-UTRA RF Channel Number		1	1	2	2
Channel Bandwidth (BW _{channel})	MHz	20	20	20	20
PDCCH/PCFICH/PHICH					
Reference measurement channel		R.7 TDD	R.7 TDD	R.7 TDD	R.7 TDD
defined in A.3.1.2.2					
OCNG Pattern defined in A.3.2.2		OP.8 TDD	OP.8 TDD	OP.8 TDD	OP.8 TDD
Io ^{Note1}	dBm/18 MHz	-62.5	-62.5	-62.5	-62.5
Note 1: lo level has been derived		parameters for in	formation purpose. I	t is not a settable	e parameter.

A.7.1.7A.2 Test Requirements

The test requirements defined in section A.7.1.7.2 shall apply to these test cases.

A.7.1.7B E-UTRAN TDD - UE Transmit Timing Accuracy Tests for SCell in sTAG for 20MHz +10MHz

A.7.1.7B.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.7.1.7. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.7.1.7B.1-1 will replace the values of corresponding parameters in Tables A.7.1.7.1-1.

Table A.7.1.7B.1-1: Test Parameters for UE Transmit Timing Accuracy Tests for Scell in sTAG for E-UTRAN TDD with 20MHz +10MHz bandwidth

Parameter	Unit Ce		ell 1	Cell 2	
Parameter	Onit	Test 1	Test 2	Test 1	Test 2
E-UTRA RF Channel Number		1	1	2	2
Channel Bandwidth (BW _{channel})	MHz	20	20	10	10
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.2		R.7 TDD	R.7 TDD	R.6 TDD	R.6 TDD
OCNG Pattern defined in A.3.2.2		OP.8 TDD	OP.8 TDD	OP.2 TDD	OP.2 TDD
Io ^{Note1}	dBm/18 MHz	-62.5	-62.5		-
10	dBm/9 MHz	-	-	-65.5	-65.5
Note 1: Io level has been derived	from other	parameters for in	formation purpose. I	t is not a settable	e parameter.

A.7.1.7B.2 Test Requirements

The test requirements defined in section A.7.1.7.2 shall apply to these test cases.

A.7.1.8 Void

A.7.1.8.1 Void

Table A.7.1.8.1-1: Void

A.7.1.8.2 Void

A.7.1.9 Void

A.7.1.8.1 Void

Table A.7.1.9.1-1: Void

A.7.1.8.2 Void

A.7.2 UE Timing Advance

A.7.2.1 E-UTRAN FDD – UE Timing Advance Adjustment Accuracy Test

A.7.2.1.1 Test Purpose and Environment

The purpose of the test is to verify E-UTRAN FDD Timing Advance adjustment accuracy requirements, defined in clause 7.3.2.2, in an AWGN model.

The test parameters are given in tables A.7.2.1.1-1, A.7.2.1.1-2, and A.7.2.1.1-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. In each time period, timing advance commands are sent to the UE and Sounding Reference Signals (SRS), as specified in table A.7.2.1.1-3, are sent from the UE and received by the test equipment. By measuring the reception of the SRS, the transmit timing, and hence the timing advance adjustment accuracy, can be measured.

During time period T1, the test equipment shall send one message with a Timing Advance Command MAC Control Element, as specified in Clause 6.1.3.5 in TS 36.321. The Timing Advance Command value shall be set to 31, which according to Clause 4.2.3 in TS 36.213 results in zero adjustment of the Timing Advance. In this way, a reference value for the timing advance used by the UE is established.

During time period T2, the test equipment shall send a sequence of messages with Timing Advance Command MAC Control Elements, with Timing Advance Command value specified in table A.7.2.1.1-2. This value shall result in changes of the timing advance used by the UE, and the accuracy of the change shall then be measured, using the SRS sent from the UE.

As specified in Clause 7.3.2.1, the UE adjusts its uplink timing at sub-frame n+6 for a timing advance command received in sub-frame n. This delay must be taken into account when measuring the timing advance adjustment accuracy, via the SRS sent from the UE.

The UE Time Alignment Timer, described in Clause 5.2 in TS 36.321, shall be configured so that it does not expire in the duration of the test.

Table A.7.2.1.1-1: General Test Parameters for E-UTRAN FDD Timing Advance Accuracy Test

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Timing Advance Command (T_A) value during T1		31	N_{TA} = 0 for the purpose of establishing a reference value from which the timing advance adjustment accuracy can be measured during T2
Timing Advance Command (T _A) value during T2		39	N _{TA} = 128
DRX		OFF	
T1	S	5	
T2	S	5	

Table A.7.2.1.1-2: Cell specific Test Parameters for E-UTRAN FDD Timing Advance Accuracy Test

Parameter	Unit	Value			
		T1	T2		
E-UTRA RF Channel Number			1		
BW _{channel}	MHz		10		
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD)			OP.1 FDD		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	7			
PDCCH_RA	dB		0		
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note1}	dB				
OCNG_RB ^{Note1}	dB				
Timing Advance Command (T _A)		31	39		
\hat{E}_{s}/I_{ot}	dB		3		
N_{oc}	dBm/15 KHz	-98			
\hat{E}_s/N_{oc}	dB	3			
lo ^{Note2}	dBm/9 MHz		-65.5		
Propagation Condition			AWGN		

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Table A.7.2.1.1-3: Sounding Reference Symbol Configuration for E-UTRAN FDD Transmit Timing Accuracy Test

Field	Value	Comment
srsBandwidthConfiguration	bw5	
srsSubframeConfiguration	sc3	Once every 5 subframes
ackNackSrsSimultaneousTransmission	FALSE	
srsMaxUpPTS	N/A	Not applicable for E-UTRAN FDD
srsBandwidth	0	No hopping
srsHoppingBandwidth	hbw0	
frequencyDomainPosition	0	
Duration	TRUE	Indefinite duration
Srs-ConfigurationIndex	7	SRS periodicity of 10.
transmissionComb	0	
cyclicShift	cs0	No cyclic shift
SRS-AntennaPort	an1	Number of antenna ports used for SRS transmission
Note: For further information see clause 6	3.3.2 in TS 36.3	31.

A.7.2.1.2 Test Requirements

The UE shall apply the signalled Timing Advance value to the transmission timing at the designated activation time i.e. 6 sub frames after the reception of the timing advance command.

The Timing Advance adjustment accuracy shall be within the limits specified in clause 7.3.2.2.

The rate of correct Timing Advance adjustments observed during repeated tests shall be at least 90%.

A.7.2.2 E-UTRAN TDD – UE Timing Advance Adjustment Accuracy Test

A.7.2.2.1 Test Purpose and Environment

The purpose of the test is to verify E-UTRAN TDD Timing Advance adjustment accuracy requirements, defined in clause 7.3.2.2, in an AWGN model.

The test parameters are given in tables A.7.2.2.1-1, A.7.2.2.1-2, and A.7.2.2.1-3. The test consists of two successive time periods, with time duration of T1 and T2 respectively. In each time period, timing advance commands are sent to the UE and Sounding Reference Signals (SRS), as specified in table A.7.2.2.1-3, are sent from the UE and received by the test equipment. By measuring the reception of the SRS, the transmit timing, and hence the timing advance adjustment accuracy, can be measured.

During time period T1, the test equipment shall send one message with a Timing Advance Command MAC Control Element, as specified in Clause 6.1.3.5 in TS 36.321. The Timing Advance Command value shall be set to 31, which according to Clause 4.2.3 in TS 36.213 results in zero adjustment of the Timing Advance. In this way, a reference value for the timing advance used by the UE is established.

During time period T2, the test equipment shall send a sequence of messages with Timing Advance Command MAC Control Elements, with Timing Advance Command value specified in table A.7.2.1.1-2. This value shall result in changes of the timing advance used by the UE, and the accuracy of the change shall then be measured, using the SRS sent from the UE.

As specified in Clause 7.3.2.1, the UE adjusts its uplink timing at sub-frame n+6 for a timing advance command received in sub-frame n. This delay must be taken into account when measuring the timing advance adjustment accuracy, via the SRS sent from the UE.

The UE Time Alignment Timer, described in Clause 5.2 in TS 36.321, shall be configured so that it does not expire in the duration of the test.

Table A.7.2.2.1-1: General Test Parameters for E-UTRAN TDD Timing Advance Accuracy Test

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Timing Advance Command (<i>T_A</i>) value during T1		31	N_{TA} = 0 for the purpose of establishing a reference value from which the timing advance adjustment accuracy can be measured during T2
Timing Advance Command (T _A) value during T2		39	N _{TA} = 128
DRX		OFF	
T1	S	5	
T2	S	5	

Table A.7.2.2.1-2: Cell specific Test Parameters for E-UTRAN TDD Timing Advance Accuracy Test

Parameter	Unit		Value
		T1	T2
E-UTRA RF Channel Number			1
BW _{channel}	MHz		10
Special subframe configuration Note1			6
Uplink-downlink configuration Note2			1
OCNG Patterns defined in A.3.2.2.1			OP.1 TDD
(OP.1 TDD)			
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB		0
PDCCH_RA	dB		0
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA ^{Note3}	dB		
OCNG_RB ^{Note3}	dB		
Timing Advance Command (T _A)		31	39
\hat{E}_{s}/I_{ot}	dB		3
N_{oc}	dBm/15 KHz	-98	
\hat{E}_s/N_{oc}	dB		3
lo ^{Note4}	dBm/9 MHz		-65.5
Propagation Condition			AWGN

Note 1: For the special subframe configuration see table 4.2-1 in TS 36.211.

Note 2: For the uplink-downlink configuration see table 4.2-2 in TS 36.211.

Note 3: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: lo level has been derived from other parameters for information purpose. It is not a settable parameter.

Table A.7.2.2.1-3: Sounding Reference Symbol Configuration for E-UTRAN TDD Transmit Timing Accuracy Test

Field	Value	Comment
srsBandwidthConfiguration	bw5	
srsSubframeConfiguration	sc3	Once every 5 subframes
ackNackSrsSimultaneousTransmission	FALSE	
srsMaxUpPTS	N/A	
srsBandwidth	bw0	No hopping
srsHoppingBandwidth	hbw0	
frequencyDomainPosition	0	
Duration	TRUE	Indefinite duration
Srs-ConfigurationIndex	15	SRS periodicity of 10ms.
transmissionComb	0	
cyclicShift	cs0	No cyclic shift
SRS-AntennaPort	an1	Number of antenna ports used for SRS transmission
Note: For further information see clause 6	3.3.2 in TS 36.3	331.

A.7.2.2.2 Test Requirements

The UE shall apply the signalled Timing Advance value to the transmission timing at the designated activation time i.e. 6 sub frames after the reception of the timing advance command.

The Timing Advance adjustment accuracy shall be within the limits specified in clause 7.3.2.2.

The rate of correct Timing Advance adjustments observed during repeated tests shall be at least 90%.

A.7.2.3 E-UTRAN FDD – UE Timing Advance Adjustment Accuracy Test for 5MHz

A.7.2.3.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.7.2.1.1.

The parameters of this test are the same as defined in Subclause A.7.2.1.1 except that the values of the parameters in the Table A.7.2.3.1-1 will replace the values of the corresponding parameters in A.7.2.1.1-1, table A.7.2.3.1-2 will replace the values of the corresponding parameters in A.7.2.1.1-2. Parameters used for the sounding reference symbol configuration are unchanged from table A.7.2.1.1-3.

Table A.7.2.3.1-1: General Test Parameters for E-UTRAN FDD Timing Advance Accuracy Test for 5MHz bandwidth

Parameter	Unit	Value	Comment			
PDSCH parameters		DL Reference Measurement Channel R.5 FDD	As specified in clause A.3.1.1.1			
PCFICH/PDCCH/PHICH DL Reference Measurement Channel parameters R.11 FDD		As specified in clause A.3.1.2.1				
Note 1: For the reference	e 1: For the reference measurement channels, see clause A.3.1.					
Note 2: See Table A.7.2.1.1-1 for the other parameters.						
Note 3: This test is accor	ding to the	e principle defined in section A.3.7.2				

Table A.7.2.3.1-2: Cell specific Test Parameters for E-UTRAN FDD Timing Advance Accuracy Test for 5MHz bandwidth

Parameter	Unit	Value			
		T1	T2		
BW _{channel}	MHz		5		
OCNG Patterns defined in			OP.15 FDD		
A.3.2.1.15 (OP.15 FDD)					
lo ^{Note2}	dBm/4.5		-68.5		
10	MHz				
Note 1: For the reference measurement channels, see clause A.3.2.					
Note 2: See Table A.7.2.1.1-2 for the other parameters.					

A.7.2.3.2 Test Requirements

The test requirements defined in section A.7.2.1.2 shall apply to this test case.

A.7.2.4 E-UTRAN FDD – UE Timing Advance Adjustment Accuracy Test for SCell in sTAG

A.7.2.4.1 Test Purpose and Environment

The purpose of the test is to verify E-UTRAN FDD Timing Advance adjustment accuracy requirements, defined in clause 7.3.2.2, in an AWGN model.

The test parameters are given in tables A.7.2.4.1-1, A.7.2.4.1-2, and A.7.2.4.1-3. For this test two cells are used. Cell 1 is PCell and Cell 2 is SCell. PCell is in the primary Timing Advance Group (pTAG) and SCell is in the secondary Timing Advance Group (sTAG). The test consists of two successive time periods, with time duration of T1 and T2 respectively. In each time period, timing advance commands for sTAG are sent to the UE and Sounding Reference Signals (SRS), as specified in table A.7.2.4.1-3, are sent from the UE and received by the test equipment. By measuring the reception of the SRS, the transmit timing, and hence the timing advance adjustment accuracy, can be measured for SCell in sTAG.

During time period T1, the test equipment shall send one message with a Timing Advance Command MAC Control Element for sTAG, as specified in Clause 6.1.3.5 in TS 36.321. The Timing Advance Command value shall be set to 31, which according to Clause 4.2.3 in TS 36.213 results in zero adjustment of the Timing Advance. In this way, a reference value for the timing advance for sTAG used by the UE is established.

During time period T2, the test equipment shall send a sequence of messages with Timing Advance Command MAC Control Elements for sTAG, with Timing Advance Command value specified in table A.7.2.4.1-2. This value shall result in changes of the timing advance for sTAG used by the UE, and the accuracy of the change shall then be measured, using the SRS sent from the UE.

As specified in Clause 7.3.2.1, the UE adjusts its uplink timing at sub-frame n+6 for a timing advance command received in sub-frame n. This delay must be taken into account when measuring the timing advance adjustment accuracy, via the SRS sent from the UE.

The UE Time Alignment Timer, described in Clause 5.2 in TS 36.321, shall be configured so that it does not expire in the duration of the test.

Table A.7.2.4.1-1: General Test Parameters for E-UTRAN FDD Timing Advance Accuracy Test for SCell in sTAG

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Timing Advance Command (T_A) value during T1		31	N_{TA} = 0 for the purpose of establishing a reference value from which the timing advance adjustment accuracy can be measured during T2
Timing Advance Command (<i>T_A</i>) value during T2		39	$N_{TA} = 128$
DRX		OFF	
T1	S	5	
T2	S	5	

Table A.7.2.4.1-2: Cell specific Test Parameters for E-UTRAN FDD Timing Advance Accuracy Test for SCell in sTAG

Parameter	Unit	Value					
	<u> </u>	Cell1			ell2		
		T1		T2	T1	T2	
E-UTRA RF Channel			1			2	
Number							
BW _{channel}	MHz		10			10	
Active PCell		Cell1		Cell1			
Active SCell					Cell2	Cell2	
TAG configuration		pTAG		pTAG	sTAG	sTAG	
OCNG Patterns defined			OP.1 FDD		OP.	1 FDD	
in A.3.2.1.1 (OP.1 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB				0		
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		_				
PDCCH_RA	dB		0				
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note1}	dB						
OCNG_RB ^{Note1}	dB						
Timing Advance	-	/		/	31	39	
Command (T _A)							
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	3				3	
N_{oc}	dBm/15 KHz	-98			-	98	
\hat{E}_s/N_{oc}	dB	3				3	
Io ^{Note2}	dBm/9 MHz	-65.5			-6	85.5	
Propagation Condition			AWGN		AV	VGN	

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: lo level has been derived from other parameters for information purpose. It is not a settable parameter.

Table A.7.2.4.1-3: Sounding Reference Symbol Configuration for E-UTRAN FDD Transmit Timing Accuracy Test for SCell in sTAG

Field	Value	Comment			
srsBandwidthConfiguration	bw5				
srsSubframeConfiguration	sc3	Once every 5 subframes			
ackNackSrsSimultaneousTransmission	FALSE				
srsMaxUpPTS	N/A	Not applicable for E-UTRAN FDD			
srsBandwidth	0	No hopping			
srsHoppingBandwidth	hbw0				
frequencyDomainPosition	0				
Duration	TRUE	Indefinite duration			
Srs-ConfigurationIndex	7	SRS periodicity of 10.			
transmissionComb	0				
cyclicShift	cs0	No cyclic shift			
SRS-AntennaPort	an1	Number of antenna ports used for SRS			
		transmission			
Note: For further information see clause 6.3.2 in TS 36.331.					

A.7.2.4.2 Test Requirements

The UE shall apply the signalled Timing Advance value for SCell in sTAG to the transmission timing at the designated activation time i.e. 6 sub frames after the reception of the timing advance command.

The Timing Advance adjustment accuracy for SCell in STAG shall be within the limits specified in clause 7.3.2.2.

The rate of correct Timing Advance adjustments observed during repeated tests shall be at least 90%.

A.7.2.5 E-UTRAN TDD – UE Timing Advance Adjustment Accuracy Test for Scell in sTAG

A.7.2.5.1 Test Purpose and Environment

The purpose of the test is to verify E-UTRAN TDD Timing Advance adjustment accuracy requirements, defined in clause 7.3.2.2, in an AWGN model.

The test parameters are given in tables A.7.2.5.1-1, A.7.2.5.1-2, and A.7.2.5.1-3. For this test two cells are used. Cell 1 is PCell and Cell 2 is SCell. PCell is in the primary Timing Advance Group (pTAG) and SCell is in the secondary Timing Advance Group (sTAG). The test consists of two successive time periods, with time duration of T1 and T2 respectively. In each time period, timing advance commands for sTAG are sent to the UE and Sounding Reference Signals (SRS), as specified in table A.7.2.5.1-3, are sent from the UE and received by the test equipment, but only for SCell. By measuring the reception of the SRS, the transmit timing, and hence the timing advance adjustment accuracy, can be measured for SCell in sTAG.

During time period T1, the test equipment shall send one message with a Timing Advance Command MAC Control Element for sTAG, as specified in Clause 6.1.3.5 in TS 36.321. The Timing Advance Command value shall be set to 31, which according to Clause 4.2.3 in TS 36.213 results in zero adjustment of the Timing Advance. In this way, a reference value for the timing advance used by the UE is established.

During time period T2, the test equipment shall send a sequence of messages with Timing Advance Command MAC Control Elements for sTAG, with Timing Advance Command value specified in table A.7.2.5.1-2. This value shall result in changes of the timing advance on SCell used by the UE, and the accuracy of the change shall then be measured, using the SRS sent from the UE.

As specified in Clause 7.3.2.1, the UE adjusts its uplink timing at sub-frame n+6 for a timing advance command received in sub-frame n. This delay must be taken into account when measuring the timing advance adjustment accuracy, via the SRS sent from the UE.

The UE Time Alignment Timer, described in Clause 5.2 in TS 36.321, shall be configured so that it does not expire in the duration of the test.

Table A.7.2.5.1-1: General Test Parameters for E-UTRAN TDD Timing Advance Accuracy Test for SCell in sTAG

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Timing Advance Command (T _A) value during T1		31	N _{TA} = 0 for the purpose of establishing a reference value from which the timing advance adjustment accuracy can be measured during T2
Timing Advance Command (T _A) value during T2		39	N _{TA} = 128
DRX		OFF	
T1	S	5	
T2	S	5	

Table A.7.2.5.1-2: Cell specific Test Parameters for E-UTRAN TDD Timing Advance Accuracy Test for SCell in sTAG

Parameter	Unit	Value				
		Cell 1	Cell 2			
		T1 T2	T1 T2			
E-UTRA RF Channel Number		1	2			
BW _{channel}	MHz	10	10			
Active PCell		Cell1				
Active SCell			Cell2			
TAG configuration		pTAG	sTAG			
Special subframe configuration Note1		6	6			
Uplink-downlink configuration Note2		1	1			
OCNG Patterns defined in A.3.2.2.1		OP.1 TDD	OP.1 TDD			
(OP.1 TDD)		OF.1 1DD	OF.1 1DD			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0	0			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note3}	dB					
OCNG_RB ^{Note3}	dB					
Timing Advance Command (T _A)			31 39			
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	3	3			
N_{oc}	dBm/15 KHz	-98	-98			
\hat{E}_s/N_{oc}	dB	3	3			
Io ^{Note4}	dBm/9 MHz	-65.5	-65.5			
Propagation Condition		AWGN	AWGN			
-			-			

Note 1: For the special subframe configuration see table 4.2-1 in TS 36.211.

Note 2: For the uplink-downlink configuration see table 4.2-2 in TS 36.211.

Note 3: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: lo level has been derived from other parameters for information purpose. It is not a settable parameter.

Table A.7.2.5.1-3: Sounding Reference Symbol Configuration for E-UTRAN TDD Transmit Timing Accuracy Test for SCell in sTAG

Field	Value	Comment						
srsBandwidthConfiguration	bw5							
srsSubframeConfiguration	sc3	Once every 5 subframes						
ackNackSrsSimultaneousTransmission	FALSE							
srsMaxUpPTS	N/A							
srsBandwidth	bw0	No hopping						
srsHoppingBandwidth	hbw0							
frequencyDomainPosition	0							
Duration	TRUE	Indefinite duration						
Srs-ConfigurationIndex	15	SRS periodicity of 10ms.						
transmissionComb	0							
cyclicShift	cs0	No cyclic shift						
SRS-AntennaPort	an1	Number of antenna ports used for SRS transmission						
Note: For further information see class								

A.7.2.5.2 Test Requirements

The UE shall apply the signalled Timing Advance value for SCell in sTAG to the transmission timing at the designated activation time i.e. 6 sub frames after the reception of the timing advance command.

The Timing Advance adjustment accuracy for SCell in sTAG shall be within the limits specified in clause 7.3.2.2.

The rate of correct Timing Advance adjustments observed during repeated tests shall be at least 90%.

A.7.2.5A E-UTRAN TDD – UE Timing Advance Adjustment Accuracy Test for Scell in sTAG for 20 MHz +20 MHz

A.7.2.5A.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.7.2.5.1.

The parameters of this test are the same as defined in Subclause A.7.2.5.1 except that the values of the parameters in the Table A.7.2.5A.1-1 will replace the values of the corresponding parameters in A.7.2.5.1-1, table A.7.2.5A.1-2 will replace the values of the corresponding parameters in A.7.2.5.1-2. Parameters used for the sounding reference symbol configuration are unchanged from table A.7.2.5.1-3.

Table A.7.2.5A.1-1: General Test Parameters for E-UTRAN TDD Timing Advance Accuracy Test for SCell in sTAG for 20 MHz +20 MHz

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.3 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.2
parameters		Channel R.10 TDD	

Table A.7.2.5A.1-2: Cell specific Test Parameters for E-UTRAN TDD Timing Advance Accuracy Test for SCell in sTAG for 20 MHz +20 MHz

Parameter	Unit	Value				
		Cell 1		Cell 1 Cell 2		
		T1	T2	T1	T2	
BW _{channel}	MHz	20		20		
OCNG Patterns defined in A.3.2.2		OP.7 TDD		OP.7 TDD		
lo ^{Note4}	dBm/18 MHz	-62.5		-62.5 -62.5		.5

A.7.2.5A.2 Test Requirements

The test requirements defined in section A.7.2.5.2 shall apply to this test case.

A.7.2.5B E-UTRAN TDD – UE Timing Advance Adjustment Accuracy Test for Scell in sTAG for 20 MHz +10 MHz

A.7.2.5B.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.7.2.5.1.

The parameters of this test are the same as defined in Subclause A.7.2.5.1 except that the values of the parameters in the Table A.7.2.5B.1-1 will replace the values of the corresponding parameters in A.7.2.5.1-1, table A.7.2.5B.1-2 will replace the values of the corresponding parameters in A.7.2.5.1-2. Parameters used for the sounding reference symbol configuration are unchanged from table A.7.2.5.1-3.

Table A.7.2.5B.1-1: General Test Parameters for E-UTRAN TDD Timing Advance Accuracy Test for SCell in sTAG for 20 MHz +10 MHz

Parameter	Unit	Value	Comment
PDSCH parameters		For Cell 1: DL Reference	As specified in clause A.3.1.1.2
		Measurement Channel R.3 TDD	
		For Cell 2: DL Reference	
		Measurement Channel R.0 TDD	
PCFICH/PDCCH/PHICH		For Cell 1: DL Reference	As specified in clause A.3.1.2.2
parameters		Measurement Channel R.10 TDD	
		For Cell 2: DL Reference	
		Measurement Channel R.6 TDD	

Table A.7.2.5B.1-2: Cell specific Test Parameters for E-UTRAN TDD Timing Advance Accuracy Test for SCell in sTAG for 20 MHz +10 MHz

Parameter	Unit	Value				
		Cell 1		Ce	II 2	
		T1	T2	T1	T2	
BW _{channel}	MHz	20		10		
OCNG Patterns defined in A.3.2.2		OP.7	OP.7 TDD		OP.1 TDD	
Io ^{Note4}	dBm/18 MHz	-62.5		N/A		
10	dBm/9 MHz	N/A	A	-65	5.5	

A.7.2.5B.2 Test Requirements

The test requirements defined in section A.7.2.5.2 shall apply to this test case.

A.7.3 Radio Link Monitoring

In the following section, any uplink signal transmitted by the UE is used for detecting the In-/Out-of-Sync state of the UE. In terms of measurement, the uplink signal is verified on the basis of the UE output power:

For intra-band contiguous carrier aggregation, transmit OFF power is measured as the mean power per component carrier.

For UE with multiple transmit antennas, transmit OFF power is measured as the mean power at each transmit connector.

- UE output power higher than Transmit OFF power -50 dBm (as defined in TS 36.101 [5]) means uplink signal
- UE output power equal to or less than Transmit OFF power -50 dBm (as defined in TS 36.101 [5]) means no uplink signal.

A.7.3.1 E-UTRAN FDD Radio Link Monitoring Test for Out-of-sync

A.7.3.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.1.1-1, A.7.3.1.1-2 and A.7.3.1.1-3 below. There is one cell (cell 1), which is the active cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.1.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

Table A.7.3.1.1-1: General test parameters for E-UTRAN FDD out-of-sync testing

Pa	rameter	Unit		Va	lue		Comment	
			Test 1	Test 2	Test 3	Test 4		
PCFICH/PDC parameters	CH/PHICH		R.6 FDD	R.7 FDD	R.6 FDD	R.7 FDD	As specified in section A.3.1.2.1. None of the PDCCH are intended for the UE under test	
OCNG param	eters		OP.2 FDD	OP.2 FDD	OP.2 FDD	OP.2 FDD	As specified in section A.3.2.1.2.	
Active cell			Cell 1	Cell 1	Cell 1	Cell 1	Cell 1 is on E-UTRA RF channel number 1	
CP length			Normal	Normal	Normal	Normal		
E-UTRĂ RF C	Channel Number		1	1	1	1	One E-UTRA FDD carrier frequency is used.	
E-UTRA Char (BW _{channel})	nnel Bandwidth	MHz	10	10	10	10		
	atrix and Antenna		1x2	2x2	1x2 Low	2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2	
Out of sync	DCI format		1A	1A	1A	1A	As defined in section 5.3.3.1.3 in TS 36.212	
transmission parameters (Note 1)	Number of Control OFDM symbols		2	2	2	2	Out of sync threshold Qout and the corresponding	
,	Aggregation level	CCE	8	8	8	8	hypothetical PDCCH/PCFICH	
	ρ _A , ρ _B		0	-3	0	-3	transmission	
	Ratio of PDCCH to RS EPRE	dB	4	1	4	1	parameters are as specified in section	
	Ratio of PCFICH to RS EPRE	dB	4	1	4	1	7.6.1 and Table 7.6.1-1 respectively.	
DRX			OFF	OFF	OFF	OFF		
Layer 3 filterin	ng		Enabled	Enabled	Enabled	Enabled	Counters: N310 = 1; N311 = 1	
T310 timer		ms	0	0	0	0	T310 is disabled	
T311 timer		ms	1000	1000	1000	1000	T311 is enabled	
Periodic CQI reporting mode			PUCCH 1-0	PUCCH 1-0	PUCCH 1-0	PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.	
CQI reporting		ms	2	2	2	2	Minimum CQI reporting periodicity	
Propagation of	hannel		AWGN	AWGN	ETU 70 Hz	ETU 70 Hz		
T1		S	1	1	1	1		
T2		S	0.4	0.4	0.4	0.4		
T3		S	0.5	0.5	0.5	0.5		

Note 1: PDCCH/PCFICH corresponding to the out of sync transmission parameters need not be included in the Reference Measurement Channel.

Table A.7.3.1.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for out-of-sync radio link monitoring tests # 1 and # 2

Parameter	Unit	Test 1			Test 2			
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel			1			1		
Number								
BW _{channel}	MHz		10			10		
Antenna			1x2			2x2		
Configuration								
OCNG Pattern								
defined in A.3.2.1			OP.2 FDD			OP.2 FDD)	
(FDD)								
ρ_A , ρ_B			0			-3		
PCFICH_RB	dB		4		1			
PDCCH_RA	dB		4		1			
PDCCH_RB	dB		4		1			
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PHICH_RA	dB		0		-3			
PHICH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG RB ^{Note 1}	dB							
SNR Note 6	dB	-4.7	-9.5	-13.5	-4.7	-9.5	-13.5	
N_{oc}	dBm/15		-98			-98		
1 oc	kHz							
Propagation condition			AWGN			AWGN		

- Note 1: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 5: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal
- Note 6: The SNR in time periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3 respectively in figure A.7.3.1.1-1.

Table A.7.3.1.1-3: Cell specific test parameters for E-UTRAN FDD (cell # 1) for out-of-sync radio link monitoring tests # 3 and # 4

Parameter	Unit	Test 3		Test 4			
		T1	T2	Т3	T1	T2	Т3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	MHz		10			10	
Correlation Matrix			1x2 Low			2x2 Low	
and Antenna							
Configuration							
OCNG Pattern							
defined in A.3.2.1			OP.2 FDD			OP.2 FDD	
(FDD)							
ρ _A , ρ _B			0			-3	
PCFICH_RB	dB		4		1		
PDCCH_RA	dB		4		1		
PDCCH_RB	dB		4		1		
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PHICH_RA	dB		0		-3		
PHICH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG RB ^{Note 1}	dB						
SNR Note 6	dB	-1.4	-5.5	-11.5	-2.3	-6.2	-12.2
N_{oc}	dBm/15	-98		-98			
1 oc	kHz						
Propagation condition		ETU 70 Hz			ETU 70 Hz		

- Note 1: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 5: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal
- Note 6: The SNR in time periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3 respectively in figure A.7.3.1.1-1.

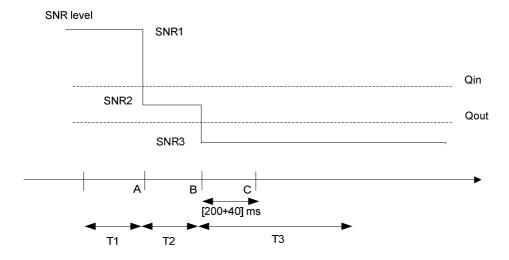


Figure A.7.3.1.1-1 SNR variation for out-of-sync testing

A.7.3.1.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (240 ms after the start of time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.2 E-UTRAN FDD Radio Link Monitoring Test for In-sync

A.7.3.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.2.1-1 and A.7.3.2.1-2 below. There is one cell (cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.2.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

Table A.7.3.2.1-1: General test parameters for E-UTRAN FDD in-sync testing

Parameter		Unit	Jnit Value		Comment	
			Test 1	Test 2		
PCFICH/PDC0 parameters	PCFICH/PDCCH/PHICH parameters		R.6 FDD	R.7 FDD	As specified in clause A.3.1.2.1. None of the PDCCH are intended for the UE under test	
OCNG parame	eters		OP.2 FDD	OP.2 FDD	As specified in clause A.3.2.1.2.	
Active cell			Cell 1	Cell 1	Cell 1 is on E-UTRA RF channel number 1	
CP length			Normal	Normal		
E-UTRA RF	Channel Number		1	1	One E-UTRA FDD carrier frequency is used.	
	nannel Bandwidth W _{channel})	MHz	10	10		
	Matrix and Antenna figuration		1x2 Low	2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2	
In sync	DCI format		1C	1C	As defined in clause 5.3.3.1.4 in TS 36.212	
n parameters (Note 1)	Number of Control OFDM symbols		2	2	In sync threshold Q _{in} and the corresponding hypothetical	
(11010-1)	Aggregation level	CCE	4	4	PDCCH/PCFICH transmission parameters	
	ρ _Α , ρ _Β		0	-3	are as specified in clause and Table 7.6.1-2 respectively.	
	Ratio of PDCCH to RS EPRE		0	-3		
	Ratio of PCFICH to RS EPRE		4	1		
Out of sync transmissio	DCI format		1A	1A	As defined in clause 5.3.3.1.3 in TS 36.212	
n parameters (Note 1)	Number of Control OFDM symbols		2	2	Out of sync threshold Q _{out} and the corresponding hypothetical	
(1000)	Aggregation level	CCE	8	8	PDCCH/PCFICH transmission parameters	
	ρ _Α , ρ _Β		0	-3	are as specified in clause 7.6.1 and Table 7.6.1-1 respectively.	
	Ratio of PDCCH to RS EPRE	dB	4	1	·	
	Ratio of PCFICH to RS EPRE	dB	4	1		
	DRX		OFF	OFF		
Layer 3 filtering)	m	Enabled	Enabled	Counters: N310 = 1; N311 = 1	
T310 timer		ms	2000	2000	T310 is enabled	

T311 timer	ms	1000	1000	T311 is enabled
Periodic CQI reporting mode		PUCCH 1-0	PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity	ms	2	2	Minimum CQI reporting periodicity
Propagation channel		ETU 70 Hz	ETU 70 Hz	
T1	S	0.5	0.5	
T2	S	0.4	0.4	
Т3	S	1.46	1.46	
T4	S	0.4	0.4	
T5	S	1	1	
N A DDOOLL/DOELOLL	- 1			

Note 1: PDCCH/PCFICH corresponding to the in-sync and out of sync transmission parameters need not be included in the Reference Measurement Channel.

Table A.7.3.2.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for in-sync radio link monitoring tests # 1 and # 2

Parameter	Unit	Test 1					Test 2						
		T1	T2	T3 T	4	T5	T1 T2 T3 T4 T5					T5	
E-UTRA RF Channel				1			1						
Number													
BW _{channel}	MHz			10					10				
Correlation Matrix				1x2 Low	1				2x2 Lo	ow			
and Antenna													
Configuration													
OCNG Pattern													
defined in A.3.2.1			(OP.2 FD	D				OP.2 F	DD			
(FDD)													
ρ _A , ρ _B				0			-3						
PCFICH_RB	dB			4			1						
PDCCH_RA	dB			0			-3						
PDCCH_RB	dB			0			-3						
PBCH_RA	dB			`									
PBCH_RB	dB												
PSS_RA	dB						-3						
SSS_RA	dB												
PHICH_RA	dB			0									
PHICH_RB	dB												
PDSCH_RA	dB												
PDSCH_RB	dB												
OCNG_RA ^{Note 1}	dB												
OCNG_RB ^{Note 1}	dB												
SNR Note 6	dB	-1.4	-5.5	-11.5	-6.4	-1.4	-2.3	-6.2	-12.2	2 -7.	3	-2.3	
N_{oc}	dBm/15	-98	•		•	•	-98		-	•			
1 ' oc	kHz												
Propagation condition		ETU 7	0 Hz				ETU 70 Hz						

Note 1: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.

Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.

Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.

Note 5: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.

Note 6: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and SNR5 respectively in figure A.7.3.2.1-1.

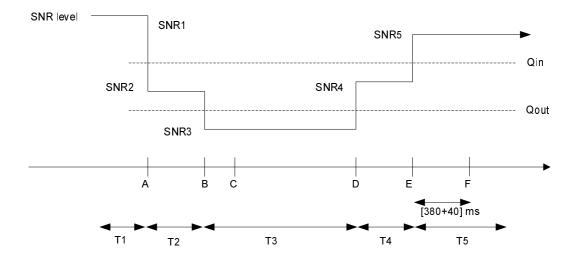


Figure A.7.3.2.1-1 SNR variation for in-sync testing

A.7.3.2.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.3 E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync

A.7.3.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.3.1-1, A.7.3.3.1-2 and A.7.3.3.1-3 below. There is one cell (cell 1), which is the active cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.3.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms.

Table A.7.3.3.1-1: General test parameters for E-UTRAN TDD out-of-sync testing

Parameter		Unit		Va	lue		Comment
			Test 1	Test 2	Test 3	Test 4	1
PCFICH/PD0 parameters	CCH/PHICH		R.6 TDD	R.7 TDD	R.6 TDD	R.7 TDD	As specified in clause A.3.1.2.2. None of the PDCCH are intended for the UE under test
OCNG parameters			OP.2 TDD	OP.2 TDD	OP.2 TDD	OP.2 TDD	As specified in clause A.3.2.2.2.
Active cell			Cell 1	Cell 1	Cell 1	Cell 1	Cell 1 is on E-UTRA RF channel number 1
CP length			Normal	Normal	Normal	Normal	
	Channel Number		1	1	1	1	One E-UTRA TDD carrier frequency is used.
E-UTRA Cha (BW _{channel})	nnel Bandwidth	MHz	10	10	10	10	
	Matrix and Antenna		1x2	2x2	1x2 Low	2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2
Out of sync	DCI format		1A	1A	1A	1A	As defined in clause 5.3.3.1.3 in TS 36.212
transmissio n parameters	Number of Control OFDM symbols		2	2	2	2	Out of sync threshold Qout and the corresponding
(Note 1)	Aggregation level	CCE	8	8	8	8	hypothetical PDCCH/PCFICH
	ρ _A , ρ _B		0	-3	0	-3	transmission
	Ratio of PDCCH to RS EPRE	dB	4	1	4	1	parameters are as specified in
	Ratio of PCFICH to RS EPRE	dB	4	1	4	1	clause 7.6.1 and Table 7.6.1-1 respectively.
DRX			OFF	OFF	OFF	OFF	
Layer 3 filteri	ng		Enabled	Enabled	Enabled	Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	0	0	0	0	T310 is disabled
T311 timer		ms	1000	1000	1000	1000	T311 is enabled
	reporting mode		PUCCH 1-0	PUCCH 1-0	PUCCH 1-0	PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity		ms	1	1	1	1	Minimum CQI reporting periodicity
Propagation	channel		AWGN	AWGN	ETU 70 Hz	ETU 70 Hz	
T1		S	1	1	1	1	
T2		S	0.4	0.4	0.4	0.4	
T3		S	0.5	0.5	0.5	0.5	

Note 1: PDCCH/PCFICH corresponding to the out of sync transmission parameters need not be included in the Reference Measurement Channel.

Table A.7.3.3.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for out-of-sync radio link monitoring tests # 1 and # 2

Parameter	Unit		Test 1			Test 2			
		T1	T2	T3	T1 T2 T3				
E-UTRA RF Channel			1		1				
Number									
BW _{channel}	MHz		10			10			
Antenna			1x2			2x2			
Configuration									
Special subframe			6			6			
configuration Note1									
Uplink-downlink			1			1			
configuration Note2									
OCNG Pattern									
defined in A.3.2.2			OP.2 TDD		OP.2 TDD				
(TDD)									
ρ_A,ρ_B			0		-3				
PCFICH_RB	dB		4		1				
PDCCH_RA	dB		4		1				
PDCCH_RB	dB		4			1			
PBCH_RA	dB								
PBCH_RB	dB								
PSS_RA	dB								
SSS_RA	dB		_			_			
PHICH_RA	dB		0			-3			
PHICH_RB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG_RA ^{Note 3}	dB								
OCNG RB ^{Note 3}	dB								
SNR Note 8	dB	-5.1	-9.1	-13.1	-5.2 -9.2 -13.				
N_{oc}	dBm/15		-98			-98			
	kHz								
Propagation condition			AWGN			AWGN			
					_				

- Note 1: For the special subframe configuration see table 4.2-1 in TS 36.211.
- Note 2: For the uplink-downlink configuration see table 4.2-2 in TS 36.211.
- Note 3: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 4: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 6: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 7: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal
- Note 8: The SNR in time periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3 respectively in figure A.7.3.3.1-1.

Table A.7.3.3.1-3: Cell specific test parameters for E-UTRAN TDD (cell # 1) for out-of-sync radio link monitoring tests # 3 and # 4

Parameter	Unit		Test 3			Test 4				
		T1	T2	T3	T1 T2 T3					
E-UTRA RF Channel			1			1				
Number										
BW _{channel}	MHz		10			10				
Correlation Matrix			1x2 Low			2x2 Low	1			
and Antenna										
Configuration										
Special subframe			6			6				
configuration Note1										
Uplink-downlink			1			1				
configuration Note2										
OCNG Pattern										
defined in A.3.2.2			OP.2 TDD)		OP.2 TD	D			
(TDD)										
ρ _Α , ρ _Β			0			-3				
PCFICH_RB	dB		4			1				
PDCCH_RA	dB		4			1				
PDCCH_RB	dB		4			1				
PBCH_RA	dB									
PBCH_RB	dB									
PSS_RA	dB									
SSS_RA	dB		_			_				
PHICH_RA	dB		0			-3				
PHICH_RB	dB									
PDSCH_RA	dB									
PDSCH_RB	dB									
OCNG_RA ^{Note 3}	dB									
OCNG RB ^{Note 3}	dB									
SNR Note 8	dB	-1.4	-5.3	-11.3	-2.3	-5.9	-11.9			
N_{oc}	dBm/15	-98			-98					
	kHz									
Propagation condition		ETU 70	Hz		ETU 70 Hz					

- Note 1: For the special subframe configuration see table 4.2-1 in TS 36.211.
- Note 2: For the uplink-downlink configuration see table 4.2-2 in TS 36.211.
- Note 3: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 4: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 6: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 7: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal RFs.
- Note 8: The SNR in time periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3 respectively in figure A.7.3.3.1-1.

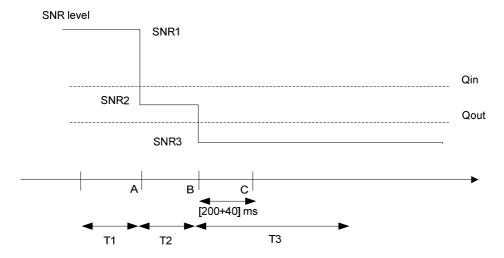


Figure A.7.3.3.1-1. SNR variation for out-of-sync testing

A.7.3.3.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the UE shall transmit uplink signal at least in all uplink subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (240 ms after the start of the time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.4 E-UTRAN TDD Radio Link Monitoring Test for In-sync

A.7.3.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.4.1-1 and A.7.3.4.1-2 below. There is one cell (cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.4.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms.

Table A.7.3.4.1-1: General test parameters for E-UTRAN TDD in-sync testing

Parameter		Unit	Va	lue	Comment			
			Test 1	Test 2				
PCFICH/PDCC parameters	CH/PHICH		R.6 TDD	R.7 TDD	As specified in clause A.3.1.2.2. None of the PDCCH are intended for the UE under test			
OCNG parame	ters		OP.2 TDD	OP.2 TDD	As specified in clause A.3.2.2.2.			
Active cell			Cell 1	Cell 1	Cell 1 is on E-UTRA RF channel number 1			
CP length			Normal	Normal				
E-UTRA RF	Channel Number		1	1	One E-UTRA FDD carrier frequency is used.			
	nannel Bandwidth W _{channel})	MHz	10	10				
	Matrix and Antenna figuration		1x2 Low	2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2			
In sync transmissio	DCI format		1C	1C	As defined in clause 5.3.3.1.4 in TS 36.212			
n parameters (Note 1)	Number of Control OFDM symbols		2	2	In sync threshold Q _{in} and the corresponding hypothetical			
(1010 1)	Aggregation level	CCE	4	4	PDCCH/PCFICH transmission parameters are as specified in			
	ρ _Α , ρ _Β		0	-3	clause and Table 7.6.1-2 respectively.			
	Ratio of PDCCH to RS EPRE		0	-3				
	Ratio of PCFICH to RS EPRE		4	1				
Out of sync	DCI format		1A	1A	As defined in clause 5.3.3.1.3 in TS 36.212			
n parameters (Note 1)	Number of Control OFDM symbols		2	2	Out of sync threshold Q _{out} and the corresponding hypothetical			
(11010-1)	Aggregation level	CCE	8	8	PDCCH/PCFICH transmission parameters are as specified in			
	$ ho_{A}, ho_{B}$		0	-3	clause 7.6.1 and Table 7.6.1-1 respectively.			
	Ratio of PDCCH to RS EPRE	dB	4	1				
	Ratio of PCFICH to RS EPRE	dB	4	1				
	DRX		OFF	OFF				
Layer 3 filtering)		Enabled	Enabled	Counters: N310 = 1; N311 = 1			
T310 timer		ms	2000	2000	T310 is enabled			

T311 timer	ms	1000	1000	T311 is enabled
Periodic CQI reporting mode		PUCCH 1-0	PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity	ms	1	1	Minimum CQI reporting periodicity
Propagation channel		ETU 70 Hz	ETU 70 Hz	
T1	S	0.5	0.5	
T2	S	0.4	0.4	
ТЗ	S	1.46	1.46	
T4	S	0.4	0.4	
T5	s	1	1	
Note 1: PDCCH/PCFICH corr	espondi	na to the in-sy	nc and out of	sync transmission

Note 1: PDCCH/PCFICH corresponding to the in-sync and out of sync transmission parameters need not be included in the Reference Measurement Channel.

Table A.7.3.4.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for in-sync radio link monitoring tests # 1 and # 2

Parameter	Unit	Test 1						Test 2						
		T1 T2 T3 T4 T5						T1 T2 T3 T4 T5						
E-UTRA RF Channel		1					1							
Number														
BW _{channel}	MHz				0					0				
Correlation Matrix				1x2	Low				2x2	Low				
and Antenna														
Configuration														
Special subframe configuration Note1				(6				(6				
Uplink-downlink				•	1				•	1				
configuration Note2														
OCNG Pattern				000	TDD				00.0					
defined in A.3.2.2				OP.2	TDD				OP.2	TDD				
(TDD)					`									
ρα, ρΒ	ID.)		-3							
PCFICH_RB	dB				4		1							
PDCCH_RA	dB)		-3							
PDCCH_RB	dB			()		-3							
PBCH_RA	dB													
PBCH_RB	dB													
PSS_RA	dB													
SSS_RA	dB									•				
PHICH_RA	dB			,)				-	3				
PHICH_RB	dB													
PDSCH_RA	dB													
PDSCH_RB	dB													
OCNG_RA ^{Note 3}	dB													
OCNG_RB ^{Note 3}	dB													

SNR Note	8	dB	-1.4	-5.3	-11.3	-6.4	-1.4	-2.3	-5.9	-11.9	-7.3	-2.3				
N_{oc}		dBm/15 kHz	-98	-98						-98						
Propagat	tion condition		ETU 7	70 Hz				ETU 7	0 Hz							
Note 1:	For the spec	ial subframe	configura	ation see	table 4.2	2-1 in TS	36.211									
Note 2:	For the uplin	k-downlink co	onfigurati	on see t	able 4.2-	2 in TS	36.211.									
Note 3:	OCNG shall power specti	be used such ral density is					fully allo	cated a	nd a con	stant tota	al transr	nitted				
Note 4:		esources for (UE prior	to the s	tart of tir	ne period	d T1.					
Note 5:	The timers a	nd layer 3 filt	ering rela	ated para	ameters a	are confi	igured pr	ior to the	e start o	f time pe	riod T1.					
Note 6:		ontains PDC0														
Note 7:	•															
Note 8:	The SNR in t	SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs. The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and SNR5 respectively in figure A 7 3 4 1-1														

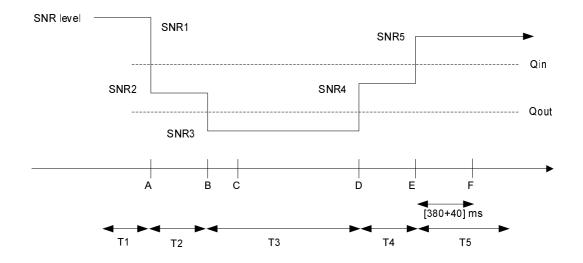


Figure A.7.3.4.1-1. SNR variation for in-sync testing

A.7.3.4.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all uplink subframes configured for CQI transmission according to the configured CQI mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.5 E-UTRAN FDD Radio Link Monitoring Test for Out-of-sync in DRX

A.7.3.5.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell when DRX is used. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.5.1-1, A.7.3.5.1-2, A.7.3.5.1-3 and A.7.3.5.1-4. There is one cell (cell 1), which is the active cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.5.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send

periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Table A.7.3.5.1-1: General test parameters for E-UTRAN FDD out-of-sync tests in DRX

Parameter		Unit	Value		Comment
			Test 1	Test 2	
PCFICH/PDC0 parameters	CH/PHICH		R.7 FDD	R.6 FDD	As specified in clause A.3.1.2.1. None of the PDCCH are intended for the UE under test
OCNG parame	eters		OP.2 FDD	OP.2 FDD	As specified in clause A.3.2.1.2.
Active cell			Cell 1	Cell 1	Cell 1 is on E-UTRA RF channel number 1
CP length			Normal	Normal	
	hannel Number		1	1	One E-UTRA FDD carrier frequency is used.
(BWchannel)	nel Bandwidth	MHz	10	10	
Correlation Ma Antenna Confi			2x2 Low	1x2	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2
Out of sync	DCI format		1A	1A	As defined in clause 5.3.3.1.3 in TS 36.212
transmission parameters (Note 1)	Number of Control OFDM symbols		2	2	Out of sync threshold Qout and the corresponding hypothetical
,	Aggregation level	CCE	8	8	PDCCH/PCFICH transmission parameters
	ρΑ, ρΒ		-3	0	are as specified in
	Ratio of PDCCH to RS EPRE	dB	1	4	clause 7.6.1 and Table 7.6.1-1 respectively.
	Ratio of PCFICH to RS EPRE	dB	1	4	
DRX cycle		ms	40	1280	See Table A.7.3.5.1-3
Layer 3 filterin	g		Enabled	Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	0	0	T310 is disabled
T311 timer		ms	1000	1000	T311 is enabled
	Periodic CQI reporting mode		PUCCH 1-0	PUCCH 1- 0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting		ms	2	2	Minimum CQI reporting periodicity
Propagation c	hannel		ETU 70 Hz	AWGN	
T1		S	4	32	
T2		S	1.6	12.8	
T3		S	1.8	13	

Note 1: PDCCH/PCFICH corresponding to the out of sync transmission parameters need not be included in the Reference Measurement Channel.

Table A.7.3.5.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for out-of-sync radio link monitoring tests # 1 and # 2 in DRX

Parameter	Unit	Test 1				Test 2		
		T1 T2 T3			T1	T2	T3	
E-UTRA RF Channel			1			1		
Number								
BW _{channel}	MHz	10				10		
Correlation Matrix			2x2 Low			1x2		
and Antenna								
Configuration								
OCNG Pattern								
defined in A.3.2.1			OP.2 FDD			OP.2 FDD		
(FDD)								
ρΑ, ρΒ			-3			0		
PCFICH_RB	dB		1			4		
PDCCH_RA	dB	1				4		
PDCCH_RB	dB	1			4			
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB		-3		0			
PHICH_RA	dB							
PHICH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note1}	dB							
OCNG_RB ^{Note1}	dB							
SNR Note 6	dB	-2.3	-6.2	-12.2	-4.7	-9.5	-13.5	
N_{oc}	dBm/15 kHz		-98			-98		
Propagation condition			ETU 70 Hz		AWGN			
		such that the resources in cell # 1 are fully allocated and a constant						
	total transmitted power spectral density is achieved for all OFDM symbols.							
Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.								
Note 3: The timers a period T1.	nd layer 3 filter	tering related parameters are configured prior to the start of time						

- Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 5: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.
- Note 6: The SNR in time periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3 respectively in figure A.7.3.5.1-1.

Table A.7.3.5.1-3: DRX-Configuration for E-UTRAN FDD out-of-sync tests

Field	Test1	Test2	Comment
Field	Value	Value	
onDurationTimer	psf2	psf2	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	psf1	36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Table A.7.3.5.1-4: TimeAlignmentTimer - Configuration for E-UTRAN FDD out-of-sync testing

Field	Test1	Test2	Comment
rieid	Value	Value	
TimeAlignmentTimer	infinity	infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

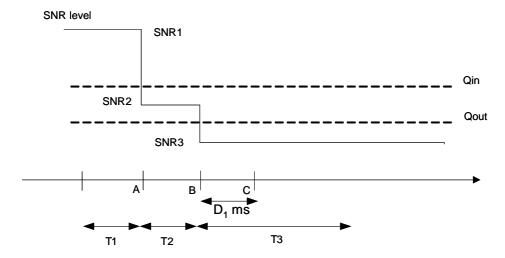


Figure A.7.3.5.1-1 SNR variation for out-of-sync testing in DRX

A.7.3.5.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

In test 1 and test 2 during the period from time point A to time point B the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the subframe according to the configured CQI reporting mode (PUCCH 1-0).

In test 1 the UE shall stop transmitting uplink signal no later than time point C (duration $D_1 = 900$ ms after the start of time duration T3).

In test 2 the UE shall stop transmitting uplink signal no later than time point C (duration $D_1 = 6500$ ms after the start of time duration T3.

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.6 E-UTRAN FDD Radio Link Monitoring Test for In-sync in DRX

A.7.3.6.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell when DRX is used. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.6.1-1, A.7.3.6.1-2, A.7.3.6.1-3 and A.7.3.6.1-4. There is one cell (cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.6.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Table A.7.3.6.1-1: General test parameters for E-UTRAN FDD in-sync test in DRX

Parar	meter	Unit	Value	Comment
PCFICH/PDCCH/P	HICH parameters		R.6 FDD	As specified in clause A.3.1.2.1. None of the PDCCH are intended for the UE under test
OCNG parameters			OP.2 FDD	As specified in clause A.3.2.1.2.
Active cell			Cell 1	Cell 1 is on E-UTRA RF channel number 1
CP length			Normal	Charmer Humber 1
E-UTRA RF Chann	el Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel B (BW _{channel})	andwidth	MHz	10	noquonoy io dood.
Antenna Configurat	ion		1x2	
, miemie eemigene	DCI format		1C	As defined in clause 5.3.3.1.4 in TS 36.212
In sync transmission parameters	Number of Control OFDM symbols		2	In sync threshold Q _{in} and the corresponding hypothetical PDCCH/PCFICH transmission
(Note 1)	Aggregation level	CC E	4	parameters are as specified in clause and Table 7.6.1-2
	ρ _A , ρ _B		0	respectively.
	Ratio of PDCCH to RS EPRE		0	
	Ratio of PCFICH to RS EPRE		4	
	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212
Out of sync transmission parameters	Number of Control OFDM symbols		2	Out of sync threshold Q _{out} and the corresponding hypothetical PDCCH/PCFICH transmission
(Note 1)	Aggregation level	CC E	8	parameters are as specified in clause 7.6.1 and Table 7.6.1-1
	ρ _A , ρ _B		0	respectively.
	Ratio of PDCCH to RS EPRE	dB	4	
	Ratio of PCFICH to RS EPRE	dB	4	
DRX cycle		ms	40	See Table A.7.3.6.1-3
Layer 3 filtering			Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	2000	T310 is enabled
T311 timer		ms	1000	T311 is enabled
Periodic CQI reporting mode			PUCCH 1- 0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity		ms	2	Minimum CQI reporting periodicity
Propagation channel			AWGN	
T1		S	4	
T2		S	1.6	
T3		S	1.46	
T4 T5		S	0.4 4	
	DCTICH correspond	S line at the th	-	Lout of sync transmission

Note 1: PDCCH/PCFICH corresponding to the in-sync and out of sync transmission parameters need not be included in the Reference Measurement Channel.

Table A.7.3.6.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for in-sync radio link monitoring test # 1 in DRX

Parameter	Unit			Test 1			
		T1	T2	T3	T4	T5	
E-UTRA RF Channel Number		1					
BW _{channel}	MHz	10					
Antenna Configuration				1x2			
OCNG Pattern defined in A.3.2.1 (FDD)		OP.2 FDD					
ΡΑ, ΡΒ				0			
PCFICH_RB	dB			4			
PDCCH_RA	dB			0			
PDCCH_RB	dB	0					
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PHICH_RA	dB			0			
PHICH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note1}	dB						
OCNG RB ^{Note1}	dB						
SNR Note 8	dB	-4.7	-9.5	-13.5	-8.7	-4.7	
N_{oc}	dBm/15 kHz	-98					
Propagation condition		AWGN					
Note 1: OCNG shall be used	such that the	resources in	cell # 1 are f	ully allocated	and a consta	int total	

- Note 1: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 5: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.
- Note 6: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and SNR5 respectively in figure A.7.3.6.1-1.

Table A.7.3.6.1-3: DRX-Configuration for E-UTRAN FDD out-of-sync tests

Field	Value	Comment
onDurationTimer	psf2	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf40	
shortDRX	disable	

Table A.7.3.6.1-4: TimeAlignmentTimer -Configuration for E-UTRAN FDD out-of-sync testing

Field	Value	Comment
TimeAlignmentTimer	infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

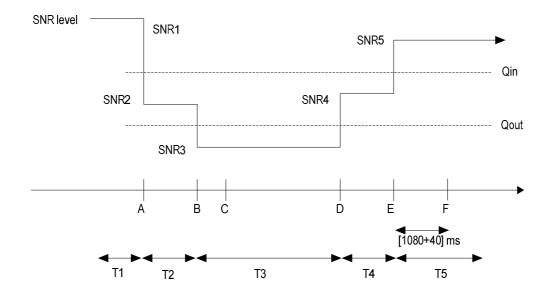


Figure A.7.3.6.1-1 SNR variation for in-sync testing in DRX

A.7.3.6.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (1120 ms after the start of time duration T5) the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the subframe according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.7 E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync in DRX

A.7.3.7.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell when DRX is used. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.7.1-1, A.7.3.7.1-2, A.7.3.7.1-3 and A.7.3.7.1-4. There is one cell (cell 1), which is the active cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.7.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Table A.7.3.7.1-1: General test parameters for E-UTRAN TDD out-of-sync tests in DRX

Parameter		Unit	Val	ue	Comment
			Test 1	Test 2	
PCFICH/PDCCH/PHICH parameters			R.7 TDD	R.6 TDD	As specified in clause A.3.1.2.2. None of the PDCCH are
					intended for the UE under test
OCNG param	eters		OP.2 TDD	OP.2 TDD	As specified in clause A.3.2.2.2.
Active cell			Cell 1	Cell 1	Cell 1 is on E-UTRA RF channel number 1
CP length			Normal	Normal	
	Channel Number		1	1	One E-UTRA TDD carrier frequency is used.
(BWchannel)	nnel Bandwidth	MHz	10	10	
Correlation Mantenna Conf			2x2 Low	1x2	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2
Out of sync	DCI format		1A	1A	As defined in clause 5.3.3.1.3 in TS 36.212
transmission parameters (Note 1)	Number of Control OFDM symbols		2	2	Out of sync threshold Qout and the corresponding hypothetical
	Aggregation level	CCE	8	8	PDCCH/PCFICH transmission parameters
	ρΑ, ρΒ		-3	0	are as specified in
	Ratio of PDCCH to RS EPRE	dB	1	4	clause 7.6.1 and Table 7.6.1-1 respectively.
	Ratio of PCFICH to RS EPRE	dB	1	4	
DRX cycle		ms	40	1280	See Table A.7.3.7.1-3
Layer 3 filterin	ng		Enabled	Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	0	0	T310 is disabled
T311 timer		ms	1000	1000	T311 is enabled
	reporting mode		PUCCH 1-0	PUCCH 1- 0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting		ms	1	1	Minimum CQI reporting periodicity
Propagation of	hannel		ETU 70 Hz	AWGN	
T1		S	4	32	
T2		S	1.6	12.8	
T3		S	1.8	13	
	COLUDOFICIA		line at the second		

Note 1: PDCCH/PCFICH corresponding to the out of sync transmission parameters need not be included in the Reference Measurement Channel.

Table A.7.3.7.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for out-of-sync radio link monitoring tests # 1 and # 2 in DRX

Parameter	Unit		Test 1		Test 2		
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	MHz		10			10	
Correlation Matrix			2x2 Low			1x2	
and Antenna							
Configuration							
Special subframe			6			6	
configuration Note1							
Uplink-downlink			1			1	
configuration ^{Note2}							
OCNG Pattern							
defined in A.3.2.2			OP.2 TDD		OP.2 TDD		
(TDD)							
ρа, ρв		-3			0		
PCFICH_RB	dB		11		4		
PDCCH_RA	dB		11		4		
PDCCH_RB	dB		1		4		
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB		_				
PHICH_RA	dB		-3			0	
PHICH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note3}	dB						
OCNG_RB ^{Note3}	dB						
SNR Note 8	dB	-2.3	-5.9	-11.9	-5.1	-9.1	-13.1
N_{oc}	dBm/15	-98		-98 -98			
	kHz						
Propagation condition		ETU 70 Hz				AWGN	

- Note 1: For the special subframe configuration see table 4.2-1 in TS 36.211.
- Note 2: For the uplink-downlink configuration see table 4.2-2 in TS 36.211.
- Note 3: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 4: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 6: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 7: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.
- Note 8: The SNR in time periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3 respectively in figure A.7.3.7.1-1.

Table A.7.3.7.1-3: DRX-Configuration for E-UTRAN TDD out-of-sync tests

Field	Test1	Test2	Comment
rieiu	Value	Value	
onDurationTimer	psf2	psf2	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	psf1	36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Table A.7.3.7.1-4: TimeAlignmentTimer - Configuration for E-UTRAN TDD out-of-sync testing

Field	Test1	Test2	Comment
rieiu	Value	Value	
TimeAlignmentTimer	infinity	infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	2	2	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

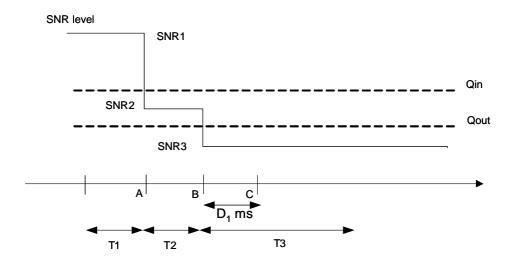


Figure A.7.3.7.1-1 SNR variation for out-of-sync testing in DRX

A.7.3.7.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

In test 1 and test 2 during the period from time point A to time point B the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the uplink subframe according to the configured CQI reporting mode (PUCCH 1-0).

In test 1 the UE shall stop transmitting uplink signal no later than time point C ($D_1 = 900$ ms after the start of time duration T3).

In test 2 the UE shall stop transmitting uplink signal no later than time point C (duration $D_1 = 6500$ ms after the start of time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.8 E-UTRAN TDD Radio Link Monitoring Test for In-sync in DRX

A.7.3.8.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell when DRX is used. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.8.1-1, A.7.3.8.1-2, A.7.3.8.1-3 and A.7.3.8.1-4. There is one cell (cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.8.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and

to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Table A.7.3.8.1-1: General test parameters for E-UTRAN TDD in-sync test in DRX

Paran	neter	Unit	Value	Comment			
PCFICH/PDCCH/PHICH parameters			R.6 TDD	As specified in clause A.3.1.2.2. None of the PDCCH are intended for the UE under test			
OCNG parameters			OP.2 TDD	As specified in clause A.3.2.2.2.			
Active cell			Cell 1	Cell 1 is on E-UTRA RF channel number 1			
CP length			Normal				
E-UTRA RF Channe	el Number		1	One E-UTRA TDD carrier frequency is used.			
E-UTRA Channel B (BW _{channel})		MHz	10				
Antenna Configurat	ion		1x2				
	DCI format		1C	As defined in clause 5.3.3.1.4 in TS 36.212			
In sync transmission parameters	Number of Control OFDM symbols		2	In sync threshold Q _{in} and the corresponding hypothetical PDCCH/PCFICH transmission			
(Note 1)	Aggregation level	CCE	4	parameters are as specified in clause and Table 7.6.1-2			
	ρ _A , ρ _B		0	respectively.			
	Ratio of PDCCH to RS EPRE		0				
	Ratio of PCFICH to RS EPRE		4				
	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212			
Out of sync transmission parameters	Number of Control OFDM symbols		2	Out of sync threshold Q _{out} and the corresponding hypothetical PDCCH/PCFICH transmission			
(Note 1)	Aggregation level	CCE	8	parameters are as specified in clause 7.6.1 and Table 7.6.1-1			
	ρΑ, ρΒ		0	respectively.			
	Ratio of PDCCH to RS EPRE	dB	4				
	Ratio of PCFICH to RS EPRE	dB	4				
DRX cycle		ms	40	See Table A.7.3.8.1-3			
Layer 3 filtering			Enabled	Counters: N310 = 1; N311 = 1			
T310 timer		ms	2000	T310 is enabled			
T311 timer		ms	1000	T311 is enabled			
Periodic CQI report			PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.			
CQI reporting period	dicity	ms	1	Minimum CQI reporting periodicity			
Propagation channe	el		AWGN				
T1		S	4				
T2		S	1.6				
T3		S	1.46				
T4 T5		S	0.4				
	PCFICH correspond	ing to the		l out of sync transmission			
				Measurement Channel.			

Table A.7.3.8.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for in-sync radio link monitoring test # 1 in DRX

Parameter	Unit	Test 1							
		T1	T2	T3	T4	T5			
E-UTRA RF Channel Number		1							
BW _{channel}	MHz			10					
Antenna Configuration				1x2					
Special subframe				6					
configuration Note1									
Uplink-downlink				1					
configuration Note2									
OCNG Pattern defined in									
A.3.2.2 (TDD)				OP.2 TDD					
ρ_A , ρ_B				0					
PCFICH_RB	dB	4							
PDCCH_RA	dB			0					
PDCCH_RB	dB	0							
PBCH_RA	dB								
PBCH_RB	dB								
PSS_RA	dB								
SSS_RA	dB								
PHICH_RA	dB			0					
PHICH_RB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG_RA ^{Note3}	dB								
OCNG RB ^{Note3}	dB								
SNR Note 8	dB	-5.1	-9.1	-13.1	-9.1	-5.1			
N_{oc}	dBm/15			-98		•			
1 oc	kHz								
Propagation condition				AWGN					
Note 1: For the special subfr	ame configurat	tion see table	e 4.2-1 in TS	36.211.					

- Note 2: For the uplink-downlink configuration see table 4.2-2 in TS 36.211.
- Note 3: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 4: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time period
- Note 6: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 7: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.
- Note 8: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and
 - SNR5 respectively in figure A.7.3.8.1-1.

Table A.7.3.8.1-3: DRX-Configuration for E-UTRAN TDD out-of-sync tests

Field	Value	Comment
onDurationTimer	psf2	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf40	
shortDRX	disable	

Table A.7.3.8.1-4: TimeAlignmentTimer - Configuration for E-UTRAN TDD out-of-sync testing

Field	Value	Comment
TimeAlignmentTimer	infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	2	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

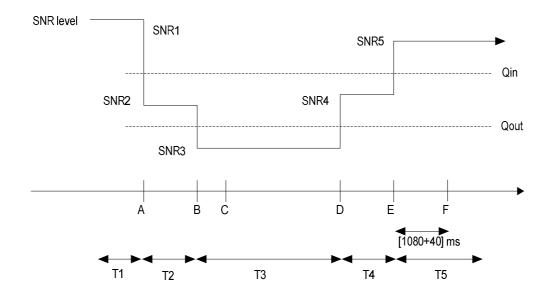


Figure A.7.3.8.1-1 SNR variation for in-sync testing in DRX

A.7.3.8.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (1120 ms after the start of time duration T5) the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the uplink subframe according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.9 E-UTRAN FDD Radio Link Monitoring Test for Out-of-sync under Time Domain Measurement Resource Restriction and Non-MBSFN ABS

A.7.3.9.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell under time domain measurement resource restriction when CRS assistance information is not provided. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.9.1-1 and A.7.3.9.1-2 below. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.9.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

Non-MBSFN ABS pattern is configured in the aggressor Cell 2 in this test. The UE is configured by higher layers with a time domain measurement restriction pattern for performing serving cell measurements. The patterns shall be configured prior to the start of T1.

Table A.7.3.9.1-1: General test parameters for E-UTRAN FDD out-of-sync testing under time domain measurement resource restriction with non-MBSFN ABS

	neter	Unit	Value	Comment		
PCFICH/PDCC	H/PHICH		R.9.FDD	As specified in clause A.3.1.2.1.		
parameters	meters			None of the PDCCH are intended for the UE		
0010	OD 0 FDD		00 0 000	under test		
OCNG parame Serving cell (Po			OP.6 FDD Cell 1	As specified in clause A.3.2.1.6. Cell 1 is on E-UTRA RF channel number 1		
Neighbor cell	Cell)		Cell 2	Aggressor cell on E-UTRA RF channel number		
Neighbor cen			Gell 2	1		
Neighbor cell A	BS		Non-MBSFN ABS	As defined in Table A.3.4.1.2-1		
configuration			NI			
CP length E-UTRA RF Ch	annal .		Normal 1	One F LITPA FDD parrier frequency is used		
Number	laririei		1	One E-UTRA FDD carrier frequency is used.		
E-UTRA Chann	nel Bandwidth	MHz	10			
(BW _{channel})						
Correlation Mat	trix and		2x2 Low	Correlation Matrix and Antenna Configuration		
Antenna Config				are defined in TS 36.101 [5] Annex B.2.3.2		
Out of sync	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212		
transmission	Number of		3	Out of sync threshold Q _{out} and the		
parameters (Note 1)	Control OFDM			corresponding hypothetical PDCCH/PCFICH transmission parameters are as specified in		
(Note 1)	symbols			clause 7.6.1 and Table 7.6.1-1 respectively.		
	Aggregation	CCE	8	olduse 7.6.1 and Table 7.6.1 Trespectively.		
_	level					
_	ρα, ρΒ		-3			
	Ratio of PDCCH to	dB	1			
	RS EPRE					
	Ratio of	dB	1			
	PCFICH to		-			
	RS EPRE					
DRX			OFF			
Layer 3 filtering)		Enabled	Counters:: N310 = 1; N311 = 1		
T310 timer		ms	1000	T310 is disabled T311 is enabled		
T311 timer Periodic CQI re	anorting mode	ms	1000 PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.		
CQI reporting p		me	2	Minimum CQI reporting periodicity		
Time offset bet		ms		Synchronous cells		
	ween cens		3 μs	Sylicitorious cells		
T1		S	1			
		S	0.4			
T2						
T2 T3		S	0.5			
) PCI	S	0.5 (PCI _{cell1} -PCI _{cell2})mod3!=	Cell IDs are chosen such that CRS from cells 1		
T3 Physical cell ID	PCI	S	(PCI _{cell1} -PCI _{cell2})mod3 != 0	and 2 do not overlap in frequency		
T3) PCI	S	(PCI _{cell1} -PCI _{cell2})mod3!= 0 '1000000010000001000	and 2 do not overlap in frequency FDD ABS Pattern Info IE, as defined in TS		
T3 Physical cell ID) PCI	s	(PCI _{cell1} -PCI _{cell2})mod3 != 0	and 2 do not overlap in frequency FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2.		
T3 Physical cell ID) PCI	S	(PCI _{cell1} -PCI _{cell2})mod3!= 0 '1000000010000001000	and 2 do not overlap in frequency FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2. The first/leftmost bit corresponds to the PCell		
T3 Physical cell ID) PCI	S	(PCI _{cell1} -PCI _{cell2})mod3!= 0 '1000000010000001000	and 2 do not overlap in frequency FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2. The first/leftmost bit corresponds to the PCell subframe #0 of the radio frame satisfying SFN		
T3 Physical cell ID) PCI	S	(PCI _{cell1} -PCI _{cell2})mod3!= 0 '1000000010000001000	and 2 do not overlap in frequency FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2. The first/leftmost bit corresponds to the PCell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string		
T3 Physical cell ID) PCI	S	(PCI _{cell1} -PCI _{cell2})mod3!= 0 '1000000010000001000	and 2 do not overlap in frequency FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2. The first/leftmost bit corresponds to the PCell subframe #0 of the radio frame satisfying SFN		
T3 Physical cell ID ABS pattern Time domain m	neasurement	S	(PCI _{cell1} -PCI _{cell2})mod3!= 0 '1000000010000001000 0000100000010000000'	and 2 do not overlap in frequency FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2. The first/leftmost bit corresponds to the PCell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. No MBSFN subframes are cofigured in the ABS subframes. Time domain measurement resource restriction		
T3 Physical cell ID ABS pattern	neasurement	S	(PCI _{cell1} -PCI _{cell2})mod3!= 0 '1000000010000001000 00001000000010000000	and 2 do not overlap in frequency FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2. The first/leftmost bit corresponds to the PCell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. No MBSFN subframes are cofigured in the ABS subframes. Time domain measurement resource restriction pattern for serving cell measurement signalled		
T3 Physical cell ID ABS pattern Time domain m	neasurement	S	(PCI _{cell1} -PCI _{cell2})mod3!= 0 '1000000010000001000 0000100000010000000'	and 2 do not overlap in frequency FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2. The first/leftmost bit corresponds to the PCell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. No MBSFN subframes are cofigured in the ABS subframes. Time domain measurement resource restriction pattern for serving cell measurement signalled to the UE in message		
T3 Physical cell ID ABS pattern Time domain m	neasurement	S	(PCI _{cell1} -PCI _{cell2})mod3!= 0 '1000000010000001000 0000100000010000000'	and 2 do not overlap in frequency FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2. The first/leftmost bit corresponds to the PCell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. No MBSFN subframes are cofigured in the ABS subframes. Time domain measurement resource restriction pattern for serving cell measurement signalled		

Reference Measurement Channel

Table A.7.3.9.1-2: Cell specific test parameters for E-UTRAN FDD for out-of-sync radio link monitoring under time domain measurement resource restriction with non-MBSFN ABS

Parameter	Unit	Cell 1			Cell 2			
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel			1		1			
Number								
BW _{channel}	MHz		10			10		
Correlation Matrix			2x2 Low			2x2 Low		
and Antenna								
Configuration								
OCNG Pattern								
defined in A.3.2.1.6			OP.6 FDD			OP.6 FDD		
(FDD)								
ρα, ρв			-3		-3			
PCFICH_RB	dB		1		Non-ABS and ABS subframe channel powers defined in			
PDCCH_RA	dB		1					
PDCCH_RB	dB		11		Table A.3.4.1.2-1.			
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB		_					
PHICH_RA	dB		-3					
PHICH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note1}	dB							
OCNG RB ^{Note1}	dB							
SNR Note 6	dB	-1.3	-5.4	-12.4		5		
N_{oc}	dBm/15		-98			-98		
	kHz							
Propagation condition			ETU 30 Hz			ETU 30 Hz		

- Note 1: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time
- Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 5: SNR levels correspond to the signal quality, signal-to-interference-plus-noise ratio, on the CRS REs.
- Note 6: The SNR in the restricted measurement subframes during time periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3 respectively in figure A.7.3. 9.1-1.

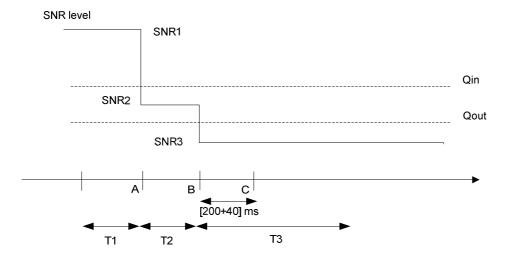


Figure A.7.3.9.1-1 SNR variation for out-of-sync testing

A.7.3.9.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (240 ms after the start of time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.10 E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync under Time Domain Measurement Resource Restriction with Non-MBSFN ABS

A.7.3.10.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell under time domain measurement resource restriction when CRS assistance information is not provided. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.10.1-1 and A.7.3.10.1-2 below. There are two cells, cell 1 is the serving cell and cell 2 is the neigbhor aggressor cell. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.10.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms.

Non-MBSFN ABS pattern is configured in Cell 2 in this test. The UE is configured by higher layers with a time domain measurement restriction pattern for performing serving cell measurements. The patterns shall be configured prior to the start of T1.

Table A.7.3.10.1-1: General test parameters for E-UTRAN TDD out-of-sync testing under time domain measurement resource restriction with non-MBSFN ABS

Par	ameter	Unit	Value	Comment			
PCFICH/PDC	CH/PHICH		R.9 TDD	As specified in clause A.3.1.2.2.			
parameters				None of the PDCCH are intended for the UE under test			
OCNG parameters			OP.2 TDD	As specified in clause A.3.2.2.2.			
Serving cell			Cell 1	Cell 1 is on E-UTRA RF channel number 1			
Neighbor cell			Cell 2	Cell 2 is the aggressor cell on E-UTRA RF channel number 1			
Neighbor cell configuration	ABS		Non-MBSFN ABS	As defined in Table A.3.4.1.2-1			
CP length			Normal				
E-UTRA RF C	Channel Number		1	One E-UTRA TDD carrier frequency is used.			
E-UTRA Char (BW _{channel})	nnel Bandwidth	MHz	10				
Correlation Ma Antenna Conf			2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2			
	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212			
Out of sync transmission parameters	Number of Control OFDM symbols		3	Out of sync threshold Q _{out} and the corresponding hypothetical PDCCH/PCFICH transmission			
(Note 1)	Aggregation level	CCE	8	parameters are as specified in clause 7.6.1 and Table 7.6.1-1			
	ρ _Α , ρ _Β		-3	respectively.			
	Ratio of PDCCH to RS EPRE	dB	1				
	Ratio of PCFICH to RS EPRE	dB	1				
Physical cell I	D PCI		(PCI _{cell1} -PCI _{cell2})mod3!=	Cell IDs are chosen such that CRS from cells 1 and 2 do not overalp in frequency.			
ABS pattern			1000000001000000000	TDD ABS Pattern Info IE is configured in Cell 2 as defined in clause 9.2.54 in TS 36.423 [28]. The first/leftmost bit corresponds to the subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (20) divided by 10. No MBSFN subframes are cofigured in the ABS subframes.			
Time domain resource restr			1000000001000000000	MeasSubframePattern IE is configured in UE for serving cell measurement as defined in clause 6.3.6 in TS 36.331.			
DRX			OFF				
Layer 3 filterin	ng		Enabled	Counters: N310 = 1; N311 = 1			
T310 timer		ms	0	T310 is disabled			
T311 timer		ms	1000	T311 is enabled			
Periodic CQI reporting mode			PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.			
Periodic CQI I	CQI reporting periodicity		1	Minimum CQI reporting periodicity			
	Time offset between cells		3				
CQI reporting		μs					
CQI reporting	etween cells	μs	ETU30				
CQI reporting Time offset be Propagation of T1	etween cells	μs s	ETU30 1				
CQI reporting Time offset be Propagation of	etween cells	•	ETU30				

the Reference Measurement Channel.

Table A.7.3.10.1-2: Cell specific test parameters for E-UTRAN TDD for out-of-sync radio link monitoring under time domain measurement resource restriction with non-MBSFN ABS

Parameter	Unit	Cell 1				Cell 2			
		T1	T2	Т3	T1	T2	Т3		
E-UTRA RF Channel			1		1				
Number									
BW _{channel}	MHz		10			10			
Correlation Matrix			2x2 Low			2x2 Low			
and Antenna									
Configuration									
Special subframe			6			6			
configuration Note1									
Uplink-downlink			1			1			
configuration ^{Note2}									
OCNG Pattern									
defined in A.3.2.2			OP.2 TDD			OP.2 TDD			
(TDD)									
ρ _A , ρ _B			-3		-3				
PCFICH_RB	dB		1		Non-ABS and ABS subframe channel powers defined in				
PDCCH_RA	dB		11						
PDCCH_RB	dB		1		Table A.3.4.1.2-1.				
PBCH_RA	dB								
PBCH_RB	dB								
PSS_RA	dB								
SSS_RA	dB		_						
PHICH_RA	dB		-3						
PHICH_RB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG_RA ^{Note 3}	dB								
OCNG RB ^{Note 3}	dB								
SNR Note 8	dB	-1.3	-5.4	-12.4		5			
N_{oc}	dBm/15	-98 -98							
	kHz								
Propagation condition		ETU30				ETU30			

- Note 1: For the special subframe configuration see table 4.2-1 in TS 36.211.
- Note 2: For the uplink-downlink configuration see table 4.2-2 in TS 36.211.
- Note 3: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 4: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 6: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 7: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.
- Note 8: The SNR in time periods T1, T2 and T3 of active cell is denoted as SNR1, SNR2 and SNR3 respectively in figure A.7.3.10.1-1.

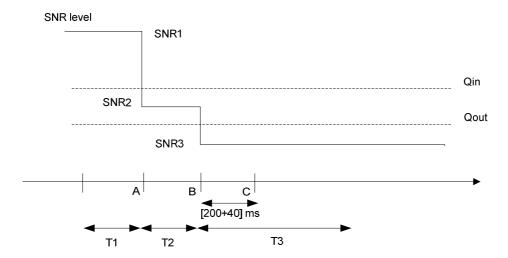


Figure A.7.3.10.1-1 SNR variation in active cell for out-of-sync testing under time domain measurement resource restriction with non-MBSFN ABS

A.7.3.10.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the UE shall transmit uplink signal at least in all uplink subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (240 ms after the start of the time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.11 E-UTRAN FDD Radio Link Monitoring Test for In-sync for Non-MBSFN ABS

A.7.3.11.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell under time domain measurement resource restriction when CRS assistance information is not provided. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.11.1-1 and A.7.3.11.1-2 below. There are two cells in the test: Cell 1 is the Active cell and Cell 2 is the Neighbor cell. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.11.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

Non-MBSFN ABS pattern is configured in Cell 2 in this test. The UE is configured by higher layers with a time domain measurement restriction pattern for performing serving cell measurements. The patterns shall be configured prior to the start of T1.

Table A.7.3.11.1-1: General test parameters for E-UTRAN FDD in-sync testing under time domain measurement resource restriction

Par	Parameter		Value	Comment
PCFICH/PD	CCH/PHICH	t	R.9 FDD	As specified in clause A.3.1.2.1.
parameters	00.1/1.111011		1	None of the PDCCH are
				intended for the UE under test
OCNG parar	meters		OP.6 FDD	As specified in clause A.3.2.1.6.
Active cell			Cell 1	Cell 1 is on E-UTRA RF channel number 1
Neighbor ce			Cell 2	Cell 2 is on E-UTRA RF channel
	•			number 1; Cell 2 generates
				interference over restricted
NI : 11	U A D O			resources.
Neighbor ce configuration			Non- MBSFN	As defined in Table A.3.4.1.2-2
Configuration	1		ABS	
CP length			Normal	
E-UTRA RF	Channel		1	One E-UTRA FDD carrier
Number	annel Bandwidth	NAL I	40	frequency is used.
(BWchannel		MH z	10	
Correlation N		_	2x2 Low	Correlation Matrix and Antenna
Antenna Cor	nfiguration			Configuration are defined in TS
	I =			36.101 [5] Annex B.2.3.2
	DCI format		1C	As defined in clause 5.3.3.1.4 in TS 36.212
In sync	Number of		3	In sync threshold Qin and the
transmissi	Control OFDM			corresponding hypothetical
on	symbols			PDCCH/PCFICH transmission
parameter s for the	Aggregation	CC	4	parameters are as specified in
active cell	level ρΑ, ρΒ	Е	-3	clause and Table 7.6.1-2 respectively.
(Note 1)	Ratio of	dB	-3	- respectively.
	PDCCH to RS	l ab		
	EPRE			
	Ratio of PCFICH to RS	dB	1	
	EPRE			
	DCI format		1A	As defined in clause 5.3.3.1.3 in
				TS 36.212
Out of sync	Number of Control OFDM		3	Out of sync threshold Qout and the corresponding hypothetical
transmissi	symbols			PDCCH/PCFICH transmission
on	Aggregation	CC	8	parameters are as specified in
parameter	level	Е		clause 7.6.1 and Table 7.6.1-1
s for active cell (Note	ρΑ, ρΒ	, r	-3	respectively.
1)	Ratio of PDCCH to RS	dB	1	
'	EPRE			
	Ratio of	dB	1	1
	PCFICH to RS			
DRX	EPRE		OFF	
Layer 3 filter	ina		Enabled	Counters:
_				N310 = 1; N311 = 1
T310 timer			2000	T310 is enabled
T311 timer	I roporting mode	ms	1000 PUCCH 1-	T311 is enabled As defined in table 7.2.2-1 in TS
Fellouic CQ	I reporting mode		0	36.213.
CQI reportin	g periodicity	ms	2	Minimum CQI reporting
				periodicity
	petween cells	μs	3	
Propagation T1	cnannei	9	0.5	
T2		S S	0.3	
				1

T3	S	1.46	
T4	S	0.4	
T5	S	1	
Physical cell ID PCI		(PCI _{cell1} -	Cell IDs are chosen such that
		PCI _{cell2}	CRS from cells 1 and 2 do not
)mod3 != 0	overalp in frequency
ABS pattern		'100000001	FDD ABS Pattern Info IE, as
		000000010	defined in TS 36.423 [28],
		000000100	clause 9.2.54. Configured in Cell
		000001000	2.
		0000'	The first/leftmost bit corresponds
			to the PCell subframe #0 of the
			radio frame satisfying SFN mod
			x = 0, where x is the size of the
			bit string (40) divided by 10.
			No MBSFN subframes are
			cofigured in the ABS subframes.
Time domain measurement		'100000001	Time domain measurement
resource restriction pattern		000000010	resource restriction pattern for
		000000100	serving cell measurement
		000001000	signalled to the UE in message
		0000'	measSubframePatternPCell-r10
			as defined in TS 36.331, clause
Note 1: DDCCH/DCFICH or			6.3.2.

Note 1: PDCCH/PCFICH corresponding to the in-sync and out of sync transmission parameters need not be included in the Reference Measurement Channel.

Table A.7.3.11.1-2: Cell specific test parameters for E-UTRAN FDD for in-sync radio link monitoring under time domain measurement resource restriction

Parameter	Unit	Cell 1								Cell 2	2	
	•	T1	T2	Т3	T4		T5	T1 T2 T3 T4 T5				
E-UTRA RF Channel				1						1		-
Number												
BW _{channel}	MHz			10						10		
Correlation Matrix				2x2 L	OW					2x2 Lo	W	
and Antenna												
Configuration												
PCFICH/PDCCH/PHI				R.9 FI	DD					R.9 FD	D	
CH parameters												
Number of Control				3						3		
OFDM symbols												
OCNG Pattern												
defined in A.3.2.1.6				OP.6 F	DD				(OP.6 FI	DD	
(FDD)												
ρΑ, ρΒ				-3						-3		
PCFICH_RB	dB			1				Non-ABS and ABS subframe				
PDCCH_RA	dB			-3				channel powers defined in Table				
PDCCH_RB	dB			-3					P	.3.4.1.2	2-2.	
PBCH_RA	dB											
PBCH_RB	dB											
PSS_RA	dB											
SSS_RA	dB			•								
PHICH_RA	dB			-3								
PHICH_RB	dB											
PDSCH_RA	dB											
PDSCH_RB	dB											
OCNG_RANote 1	dB											
OCNG_RB ^{Note 1}	dB		1	1								
SNR Note 6	dB	-1.3	-5.4	-12.4		-7.3	-1.3			5		
N_{oc}	dBm/15			-98	·		•		•	-98		
1 oc	kHz											
Propagation condition		ETU30								ETU3	0	

Note 1: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.

Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.

Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.

Note 5: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.

Note 6: The SNR in time periods T1, T2, T3, T4 and T5 of the active cell is denoted as SNR1, SNR2, SNR3, SNR4 and SNR5 respectively in figure A.7.3.11.1-1.

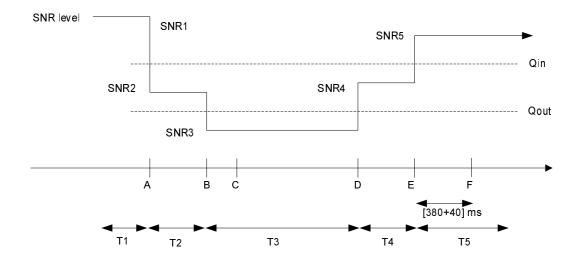


Figure A.7.3.11.1-1 SNR variation in the active cell for in-sync testing under time domain measurement resource restriction

A.7.3.11.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.12 E-UTRAN TDD Radio Link Monitoring Test for In-sync for Non-MBSFN ABS

A.7.3.12.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell under time domain measurement resource restriction when CRS assistance information is not provided. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.12.1-1 and A.7.3.12.1-2 below. There are two cells in the test: Cell 1 is the Active cell and Cell 2 is the Neighbor cell. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.12.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms.

Non-MBSFN ABS pattern is configured in the aggressor Cell 2 in this test. The UE is configured by higher layers with a time domain measurement restriction pattern for performing serving cell measurements. The patterns shall be configured prior to the start of T1.

Table A.7.3.12.1-1: General test parameters for E-UTRAN TDD in-sync testing under time domain measurement resource restriction

Par	Parameter		Value	Comment
PCFICH/PD	CCH/PHICH	t	R.9 TDD	As specified in
parameters				clause A.3.1.2.2.
•				None of the PDCCH are
			00.000	intended for the UE under test
OCNG para	meters		OP.2 TDD	As specified in
Active cell			Cell 1	clause A.3.2.2.2. Cell 1 is on E-UTRA RF
Active cell			Cell 1	channel number 1
Neighbor ce	II		Cell 2	Cell 2 is on E-UTRA RF
				channel number 1; Cell 2
				generates interference over
Neighbor ce	II A D C		Non-MBSFN	restricted resources. As defined in Table A.3.4.1.2-
configuration			ABS	2
CP length			Normal	_
E-UTRA RF	Channel		1	One E-UTRA TDD carrier
Number				frequency is used.
	annel Bandwidth	MH	10	
(BWchannel		Z	2x2 Low	Convolation Matrix and
Correlation I Antenna Co			ZXZ LOW	Correlation Matrix and Antenna Configuration are
Antenna Con	ingulation			defined in TS 36.101 [5]
				Annex B.2.3.2
	DCI format		1C	As defined in clause 5.3.3.1.4
				in TS 36.212
In sync	Number of		3	In sync threshold Qin and the
transmissi on	Control OFDM symbols			corresponding hypothetical PDCCH/PCFICH transmission
parameter	Aggregation	CC	4	parameters are as specified in
s for the	level	E		clause and Table 7.6.1-2
active cell	ρΑ, ρΒ		-3	respectively.
(Note 1)	Ratio of	dB	-3]
	PDCCH to RS			
	EPRE Ratio of	dB	1	-
	PCFICH to RS	uБ		
	EPRE			
	DCI format		1A	As defined in clause 5.3.3.1.3
				in TS 36.212
Out of	Number of		3	Out of sync threshold Qout
sync transmissi	Control OFDM symbols			and the corresponding hypothetical PDCCH/PCFICH
on	Aggregation	СС	8	transmission parameters are
parameter	level	E		as specified in clause 7.6.1
s for active	ρΑ, ρΒ		-3	and Table 7.6.1-1
cell (Note	Ratio of	dB	1	respectively.
1)	PDCCH to RS			
	EPRE Patio of	40	1	-
	Ratio of PCFICH to RS	dB	1	
	EPRE			
DRX	l		OFF	
Layer 3 filter	ing		Enabled	Counters:
T040 ::			0000	N310 = 1; N311 = 1
T310 timer		ms	2000	T310 is enabled
T311 timer	I reporting mode	ms	1000 PUCCH 1-0	T311 is enabled As defined in table 7.2.2-1 in
I GIIOGIC CQ	r reporting mode		1 000111-0	TS 36.213.
CQI reportin	g periodicity	ms	1	Minimum CQI reporting
				periodicity
	oetween cells	μs	3	
Propagation	channel		ETU30	

T1	S	0.5	
T2	S	0.4	
T3	S	1.46	
T4	S	0.4	
T5	S	1	
Physical cell ID PCI		(PCI _{cell1} - PCI _{cell2})mod3 != 0	Cell IDs are chosen such that CRS from cells 1 and 2 do not overalp in frequency
ABS pattern		1000000000	TDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2. The first/leftmost bit corresponds to the subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (20) divided by 10. No MBSFN subframes are cofigured in the ABS subframes.
Time domain measurement resource restriction pattern		100000000 100000000	Time domain measurement resource restriction pattern for serving cell measurement signalled to the UE in message measSubframePatternPCell-r10 as defined in TS 36.331, clause 6.3.2. Configured in Cell 1.

Note 1: PDCCH/PCFICH corresponding to the in-sync and out of sync transmission parameters need not be included in the Reference Measurement Channel.

Table A.7.3.12.1-2: Cell specific test parameters for E-UTRAN TDD for in-sync radio link monitoring under time domain measurement resource restriction

Parameter	Unit	Cell 1						Cell 2					
		T1	T2	T3	T4	T5	T1	T2	T3	T4	T5		
E-UTRA RF Channel			•	1			1						
Number													
BW _{channel}	MHz			10			10						
Correlation Matrix				2x2 Low	,				2x2 Lo	w			
and Antenna													
Configuration													
Special subframe				6					6				
configuration Note1													
Uplink-downlink				1					1				
configuration Note2													
PCFICH/PDCCH/PHI				R.9 TDD					R.9 TE	DD			
CH parameters													
Number of Control				3					3				
OFDM symbols													
OCNG Pattern													
defined in A.3.2.2				OP.2 TDI)		OP.2 TDD						
(TDD)													
ρ _A , ρ _B				-3			-3						
PCFICH_RB	dB			1			Non-ABS and ABS subframe						
PDCCH_RA	dB			-3			channel powers defined in Table						
PDCCH_RB	dB			-3			A.3.4.1.2-2.						
PBCH_RA	dB												
PBCH_RB	dB	<u> </u>											
PSS_RA	dB	<u> </u>											
SSS_RA	dB												
PHICH_RA	dB	<u> </u>		-3									
PHICH_RB	dB												
PDSCH_RA	dB												
PDSCH_RB	dB												
OCNG_RA ^{Note 3}	dB												
OCNG_RB ^{Note 3}	dB												
SNR Note 8	dB	-1.3 -5.4 -12.4 -7.3 -1.3						5					
N_{oc}	dBm/15		•	-98									
1 voc	kHz												
Propagation condition				ETU30					ETU3	0			

- Note 1: For the special subframe configuration see table 4.2-1 in TS 36.211.
- Note 2: For the uplink-downlink configuration see table 4.2-2 in TS 36.211.
- Note 3: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 4: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 6: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 7: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.
- Note 8: The SNR in time periods T1, T2, T3, T4 and T5 of active cell is denoted as SNR1, SNR2, SNR3, SNR4 and SNR5 respectively in figure A.7.3.12.1-1.

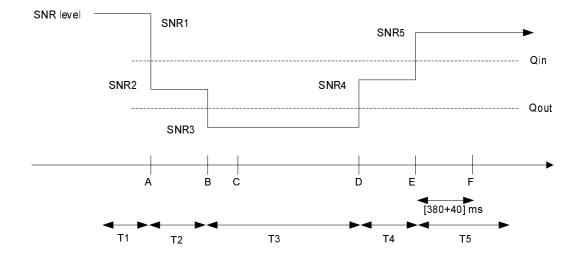


Figure A.7.3.12.1-1 SNR variation in active cell for in-sync testing under time domain measurement resource restriction

A.7.3.12.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all uplink subframes configured for CQI transmission according to the configured CQI mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.13 E-UTRAN FDD Radio Link Monitoring Test for Out-of-sync under Time Domain Measurement Resource Restriction with MBSFN ABS

A.7.3.13.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell under time domain measurement resource restriction when CRS assistance information is not provided. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.13.1-1 and A.7.3.13.1-2 below. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.13.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to Cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

MBSFN ABS pattern is configured in the aggressor Cell 2 in this test. The UE is configured by higher layers with a time domain measurement restriction pattern for performing serving cell measurements. The patterns shall be configured prior to the start of T1.

Table A.7.3.13.1-1: General test parameters for E-UTRAN FDD out-of-sync testing under time domain measurement resource restriction with MBSFN ABS

R.9.FDD As specified in clause A.3.1.2.1.	Para	meter	Unit	Value	Comment
OCNG parameters OP 6 FDD for the serving cell (Cell 1) OP 9 FDD for the neighbour cell (Cell 2) Serving cell (FCell) Neighbor cell OE 1	PCFICH/PDC	CH/PHICH		R.9.FDD	As specified in clause A.3.1.2.1.
Cell (Cell 1) OP.9 FDD for the neighbour cell (Cell 2) OP.9 FDD for the neighbour cell (Cell 2) Cell 1 Cell 1 Cell 1 Sagressor cell on E-UTRA RF channel number 1 Aggressor cell on E-UTRA RF channel number 1 Cell 1 Aggressor cell on E-UTRA RF channel number 1 Aggressor cell on E-UTRA RF channel number 1 Aggressor cell on E-UTRA RF channel number 1 Cell 1 Aggressor cell on E-UTRA RF channel number 1 Aggressor cell on E-UTRA RF channel number 1 Cell 1 Aggressor cell on E-UTRA RF channel number 1 Cell 1 Aggressor cell on E-UTRA RF channel number 1 Cell 1 Cell 1 Aggressor cell on E-UTRA RF channel number 1 Cell 1 Cell 1 Cell 1 Aggressor cell on E-UTRA RF channel number 1 Cell 1 Cell 1 Cell 1 Aggressor cell on E-UTRA RF channel number 1 Cell 1 Cell 1 Cell 1 Aggressor cell on E-UTRA RF channel number 1 Cell 1 Cell 1 Cell 1 Aggressor cell on E-UTRA RF channel number 1 Cell 1 Cell 1 Cell 1 Aggressor cell on E-UTRA RF channel number 1 Cell 1 Cell 1 Cell 1 Aggressor cell on E-UTRA RF channel number 1 Aggressor cell on E-UTRA RF channel number 1 Cell 1 C	parameters				
OP.9 FDD for the neighbour cell (Cell 2)	OCNG parame	eters		OP.6 FDD for the serving	As specified in clause A.3.2.1.6 and A.3.2.1.9
Neighbour cell (PCell) Cell 1 Cell 2 Cell 1 Cell 1 Cell 2 Aggressor cell on E-UTRA RF channel number 1 Aggressor cell on E-UTRA RF channel number 2 Aggressor cell on E-UTRA RF channel number 1 Aggressor cell on E-UTRA RF channel number 2 Aggressor 2 Agg				cell (Cell 1)	respectively
Serving cell (PCell) Cell 1 Cell 1 so n.E-UTRA RF channel number 1					
Neighbor cell ABS					
Neighbor cell ABS		Cell)			
configuration CP length Normal E-UTRA RF Channel Number 1 One E-UTRA FDD carrier frequency is used. E-UTRA Channel Bandwidth (BW damane) MHz 10 Correlation Matrix and Antenna Configuration 2x2 Low Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2 Out of sync Iransmission Parameters (Note 1) DCI format DC 1 A As defined in clause 5.3.3.1.3 in TS 36.212 Inaministic Parameters (Note 1) OFDM Symbols Aggregation level 3 Out of sync threshold Q _{ma} and the corresponding hypothetical PDCCH/PCFICH transmission parameters are specified in clause 7.6.1 and Table 7.6.1-1 respectively. Aggregation Ratio of PDCCH to RS EPRE B 1 PCFICH to RS EPRE Ratio of PDCCH to RS EPRE B 1 PCFICH to RS EPRE DRX Layer 3 filtering Enabled Counters:: N310 = 1; N311 = 1 Layer 3 filtering ms 0 T310 is disabled T311 time ms 1000 T311 is enabled Periodic CQI reporting mode PUCCH 1-0 As defined in table 7.2.2-1 in TS 36.213. T1 s 1 S 1 T2 s 0.4 S 1 T2 s 0.4 S 1	Neighbor cell			Cell 2	Aggressor cell on E-UTRA RF channel number 1
CP length		ABS		MBSFN ABS	As defined in Table A.3.4.2.2-1
E-UTRA FC hannel					
Number	CP length				
E-UTRA Channel Bandwidth MHz 10		hannel		1	One E-UTRA FDD carrier frequency is used.
Correlation Matrix and Antenna Configuration Correlation Matrix and Antenna Configuration Antenna Configuration Section Correlation Matrix and Antenna Configuration Antenna Configuration Artenna Control Proportion Artenna Control Proportio		15 1 11		10	
Antenna Configuration	(BW _{channel})		MHz	10	
Out of sync threshold Q _{out} and the corresponding hypothetical PDCCH/PCFICH transmission parameters (Note 1) Aggregation Evel PA, PB PCCH PCFICH to RS EPRE Ratio of PCFICH to RS EPRE PCCH PCCH				2x2 Low	
transmission parameters (Note 1) Marcher of Control OFDM Symbols Aggregation level CCE 8 Ratio of PDCCH to RS EPRE Ratio of PCFICH to RS EPRE CS Ratio of					
Control OFDM Symbols Aggregation level PDCCH/PCFICH transmission parameters are as specified in clause 7.6.1 and Table 7.6.1-1 respectively.					
Note 1			1	3	
Symbols CCE 8					
Aggregation Icvel PA, PB Ratio of PDCCH to RS EPRE Ratio of PCF CB Ratio of	(Note 1)				
Ievel			CCE	0	clause 7.6.1 and Table 7.6.1-1 respectively.
Ratio of PDCCH to RS EPRE Ratio of PCFICH to RS EPRE Ratio of RS EPRE Ratio of PCFICH to RS EPRE Ratio of PCFICH to RS EPRE Ratio of RS EPRE			CCE		
PDCCH to RS EPRE Ratio of PCFICH to RS EPRE Ratio of PCFICH to RS EPRE Ratio of PCFICH to RS EPRE PCFICH TS 36.213. DRX					
RS EPRE			dB	1	
Ratio of PCFICH to RS EPRE OFF					
DRX			dВ	1	
DRX OFF Layer 3 filtering Enabled Counters:: N310 = 1; N311 = 1 T310 timer ms 0 T310 is disabled 7311 timer ms 1000 T311 is enabled Periodic CQI reporting mode PUCCH 1-0 As defined in table 7.2.2-1 in TS 36.213. CQI reporting periodicity ms 2 Minimum CQI reporting periodicity Time offset between cells 3 μs Synchronous cells T1 s 1 T2 s 0.4 T3 s 0.5 Physical cell ID PCI (PCI _{cell1} -PCI _{cell2}) mod 3 = 0, PCI _{cell1} not equal to PCI _{cell2} Cell IDs are chosen such that CRS from cells 1 and 2 overlap in frequency ABS pattern '010000001000000010000 FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2. The first/leftmost bit corresponds to the PCell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. MBSFN subframes are cofigured in the ABS subframes. Time domain measurement resource restriction pattern '0100000100000100000010000000000000000		PCFICH to	GD.		
T310 timer ms 0 T310 is disabled T311 timer ms 1000 T311 is enabled Periodic CQI reporting mode PUCCH 1-0 As defined in table 7.2.2-1 in TS 36.213. CQI reporting periodicity ms 2 Minimum CQI reporting periodicity Time offset between cells 3 μs Synchronous cells T1 s 1 T2 s 0.4 T3 s 0.5 Physical cell ID PCI (PCI _{cell1} -PCI _{cell2}) mod 3 = 0, PCI _{cell2} mot equal to PCI _{cell2} Cell IDs are chosen such that CRS from cells 1 and 2 overlap in frequency ABS pattern '010000001000000100000001000 FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2. The first/leftmost bit corresponds to the PCell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. MBSFN subframes are cofigured in the ABS subframePattern-seource restriction pattern for serving cell measurement signalled to the UE in message measSubframePattern-Serv-r10 as defined in TS 36.331, clause 6.3.2. Note 1: PDCCH/PCFICH corresponding to the out of sync transmission parameters need not be included in the	DRX	_		OFF	
T310 timer ms 0 T310 is disabled T311 timer ms 1000 T311 is enabled Periodic CQI reporting mode PUCCH 1-0 As defined in table 7.2.2-1 in TS 36.213. CQI reporting periodicity ms 2 Minimum CQI reporting periodicity Time offset between cells 3 μs Synchronous cells T1 s 1 T2 s 0.4 T3 s 0.5 Physical cell ID PCI (PCI _{cell1} -PCI _{cell2}) mod 3 = 0, PCI _{cell2} mot equal to PCI _{cell2} Cell IDs are chosen such that CRS from cells 1 and 2 overlap in frequency ABS pattern '0100000010000001000000100000000000000	Layer 3 filterin	g		Enabled	Counters:: N310 = 1; N311 = 1
Periodic CQI reporting mode PUCCH 1-0 As defined in table 7.2.2-1 in TS 36.213. CQI reporting periodicity ms 2 Minimum CQI reporting periodicity Time offset between cells 3 μs Synchronous cells T1 s 1 T2 s 0.4 T3 s 0.5 Physical cell ID PCI (PCI _{cell1} -PCI _{cell2}) mod 3 = 0, PCI _{cell2} not equal to PCI _{cell2} Cell IDs are chosen such that CRS from cells 1 and 2 overlap in frequency ABS pattern '01000000100000010000001000 pCI _{cell2} FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2. The first/leftmost bit corresponds to the PCell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. MBSFN subframes are cofigured in the ABS subframes. Time domain measurement resource restriction pattern '01000000100000010000001000 Time domain measurement resource restriction pattern for serving cell measurement signalled to the UE in message measSubframePattern-Serv-r10 as defined in TS 36.331, clause 6.3.2. Note 1: PDCCH/PCFICH corresponding to the out of sync transmission parameters need not be included in the			ms	0	T310 is disabled
CQI reporting periodicity ms 2 Minimum CQI reporting periodicity Time offset between cells 3 μ s Synchronous cells T1 s 1 T2 s 0.4 T3 s 0.5 Physical cell ID PCI (PCI _{cell1} -PCI _{cell2}) mod 3 = 0, PCI _{cell2} not equal to PCI _{cell2} ABS pattern (0100000010000001000 PCI _{cell2}) FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2. The first/leftmost bit corresponds to the PCell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. MBSFN subframes are cofigured in the ABS subframes. Time domain measurement resource restriction pattern (0100000100000010000000000000000000000			ms		
Time offset between cells 3 μ s Synchronous cells T1 S 1 T2 S 0.4 T3 S 0.5 Physical cell ID PCI (PCI _{cell1} -PCI _{cell2}) mod 3 = 0, PCI _{cell2} not equal to PCI _{cell2} ABS pattern (010000001000000100000001000000000000	Periodic CQI r	reporting mode		PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$			ms		
T2 S 0.4 T3 S 0.5 Physical cell ID PCI (PCI _{cell1} -PCI _{cell2}) mod 3 = 0, PCI _{cell1} not equal to PCI _{cell2} ABS pattern ('0100000100000010000000000000000000000	Time offset be	tween cells		3 μs	Synchronous cells
T3 s 0.5 Physical cell ID PCI (PCI _{cell1} -PCI _{cell2}) mod 3 = 0, PCI _{cell1} not equal to PCI _{cell2} (100000010000001000 pCI _{cell2}) mod 3 = 0, PCI _{cell2} (100000010000001000 pCI _{cell2}) mod 3 = 0, PCI _{cell2} (100000010000001000 pCI _{cell2}) mod 2 overlap in frequency (1000000100000010000001000 pCI _{cell2}) ABS pattern (1000000100000010000000000000000000000	T1		S		
T3 s 0.5 Physical cell ID PCI (PCI _{cell1} -PCI _{cell2}) mod 3 = 0, PCI _{cell1} not equal to PCI _{cell2} (100000010000001000 pCI _{cell2}) mod 3 = 0, PCI _{cell2} (100000010000001000 pCI _{cell2}) mod 3 = 0, PCI _{cell2} (100000010000001000 pCI _{cell2}) mod 2 overlap in frequency (1000000100000010000001000 pCI _{cell2}) ABS pattern (1000000100000010000000000000000000000	T2		s	0.4	
Physical cell ID PCI					
ABS pattern '010000010000001000 00000100000010000000 '01000001000000100000000		D DCI	 		Call IDs are chosen such that CBS from salls 4
ABS pattern '0100000100000010000 00000010000001000000	rnysicai cell II	D FOI			
ABS pattern '010000010000001000 O000010000010000001 Sequence of the positive of the properties of t					and 2 overlap in nequency
Time domain measurement resource restriction pattern '0100000100000100000010000001 Time domain measurement resource restriction pattern '010000010000010000001000 Time domain measurement resource restriction pattern '010000010000010000000000000000000000	ABS nattern		1		FDD ABS Pattern Info IF, as defined in TS
The first/leftmost bit corresponds to the PCell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. MBSFN subframes are cofigured in the ABS subframes. Time domain measurement resource restriction pattern '010000010000001000 Time domain measurement resource restriction pattern for serving cell measurement signalled to the UE in message measSubframePattern-Serv-r10 as defined in TS 36.331, clause 6.3.2. Note 1: PDCCH/PCFICH corresponding to the out of sync transmission parameters need not be included in the	20 pattorn				
subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. MBSFN subframes are cofigured in the ABS subframes. Time domain measurement resource restriction pattern '010000010000001000 Time domain measurement resource restriction pattern for serving cell measurement signalled to the UE in message measSubframePattern-Serv-r10 as defined in TS 36.331, clause 6.3.2. Note 1: PDCCH/PCFICH corresponding to the out of sync transmission parameters need not be included in the					
mod x = 0, where x is the size of the bit string (40) divided by 10. MBSFN subframes are cofigured in the ABS subframes. Time domain measurement resource restriction pattern '010000010000010000000000000000000000					
Time domain measurement resource restriction pattern O000001000000100000000000000000000000					mod x = 0, where x is the size of the bit string
Time domain measurement resource restriction pattern '010000010000010000 Time domain measurement resource restriction pattern for serving cell measurement signalled to the UE in message measSubframePattern—Serv-r10 as defined in TS 36.331, clause 6.3.2. Note 1: PDCCH/PCFICH corresponding to the out of sync transmission parameters need not be included in the					
resource restriction pattern 000000100000010000000' pattern for serving cell measurement signalled to the UE in message measSubframePattern-Serv-r10 as defined in TS 36.331, clause 6.3.2. Note 1: PDCCH/PCFICH corresponding to the out of sync transmission parameters need not be included in the					cofigured in the ABS subframes.
to the UE in message measSubframePattern- Serv-r10 as defined in TS 36.331, clause 6.3.2. Note 1: PDCCH/PCFICH corresponding to the out of sync transmission parameters need not be included in the					
Note 1: PDCCH/PCFICH corresponding to the out of sync transmission parameters need not be included in the	resource restr	iction pattern		00000010000001000000'	
Note 1: PDCCH/PCFICH corresponding to the out of sync transmission parameters need not be included in the					
	N	0011/505:5::		<u> </u>	
					nission parameters need not be included in the

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Table A.7.3.13.1-2: Cell specific test parameters for E-UTRAN FDD for out-of-sync radio link monitoring under time domain measurement resource restriction with MBSFN ABS

Parameter	Unit		Cell 1		Cell 2			
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel			1		1			
Number								
BW _{channel}	MHz		10			10		
Correlation Matrix			2x2 Low			2x2 Low		
and Antenna								
Configuration								
OCNG Pattern								
defined in A.3.2.1			OP.6 FDD			OP.9 FDD		
(FDD)								
ρ _Α , ρ _Β			-3			-3		
PCFICH_RB	dB		11		Non-ABS and ABS subframe			
PDCCH_RA	dB		1		channel powers defined in Table A.3.4.2.2-1.			
PDCCH_RB	dB		11					
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB		_					
PHICH_RA	dB		-3					
PHICH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note1}	dB							
OCNG_RB ^{Note1}	dB							
SNR Note 6	dB	-1.3	-5.4	-12.4		5		
N_{oc}	dBm/15 kHz		-98		-98			
Propagation condition			ETU 30 Hz			ETU 30 Hz	 :	

- Note 1: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time
- Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 5: SNR levels correspond to the signal quality, signal-to-interference-plus-noise ratio, on the CRS REs.
- Note 6: The SNR in the restricted measurement subframes during time periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3 respectively in figure A.7.3.13.1-1.

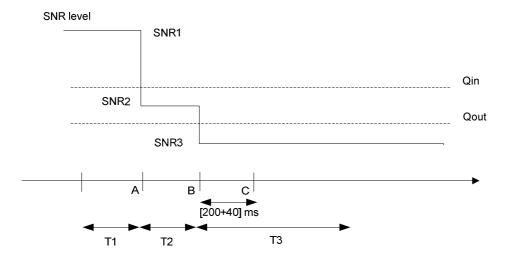


Figure A.7.3.13.1-1 SNR variation for out-of-sync testing

A.7.3.13.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (240 ms after the start of time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.14 E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync under Time Domain Measurement Resource Restriction with MBSFN ABS

A.7.3.14.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell under time domain measurement resource restriction when CRS assistance information is not provided. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.14.1-1 and A.7.3.14.1-2 below. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.14.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to Cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

MBSFN ABS pattern is configured in the aggressor Cell 2 in this test. The UE is configured by higher layers with a time domain measurement restriction pattern for performing serving cell measurements. The patterns shall be configured prior to the start of T1.

Table A.7.3.14.1-1: General test parameters for E-UTRAN TDD out-of-sync testing under time domain measurement resource restriction with MBSFN ABS

Para	meter	Unit	Value	Comment
PCFICH/PDC0 parameters	CH/PHICH		R.9.TDD	As specified in clause A.3.1.2.1. None of the PDCCH are intended for the UE under test
OCNG parame	eters		OP.2 TDD for the serving cell (Cell 1) OP.6 TDD for the neighbour cell (Cell 2)	As specified in clause A.3.2.2.2 and A.3.2.2.6 respectively
Serving cell (F	Cell)		Cell 1	Cell 1 is on E-UTRA RF channel number 1
Neighbor cell			Cell 2	Aggressor cell on E-UTRA RF channel number 1
Neighbor cell a configuration	ABS		MBSFN ABS	As defined in Table A.3.4.2.2-1
CP length			Normal	
E-UTRA RF C Number	hannel		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Chan (BW _{channel})	nel Bandwidth	MHz	10	
Correlation Ma			2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2
Out of sync	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212
transmission parameters (Note 1)	Number of Control OFDM symbols		3	Out of sync threshold Q _{out} and the corresponding hypothetical PDCCH/PCFICH transmission parameters are as specified in clause 7.6.1 and Table 7.6.1-1 respectively.
	Aggregation level	CCE	8	
	ρΑ, ρΒ		-3	
	Ratio of PDCCH to RS EPRE	dB	1	
	Ratio of PCFICH to RS EPRE	dB	1	
DRX			OFF	
Layer 3 filterin	g		Enabled	Counters:: N310 = 1; N311 = 1
T310 timer		ms	0	T310 is disabled
T311 timer Periodic CQI r	enorting mode	ms	1000 PUCCH 1-0	T311 is enabled As defined in table 7.2.2-1 in TS 36.213.
CQI reporting	<u> </u>	m.a		Minimum CQI reporting periodicity
		ms	1	. 0.
Time offset be	tween cells		3 μs	Synchronous cells
T1		S	1	
T2		S	0.4	
T3		S	0.5	
Physical cell II	D PCI		(PCI _{cell1} -PCI _{cell2}) mod 3 = 0, PCI _{cell1} not equal to PCI _{cell2}	Cell IDs are chosen such that CRS from cells 1 and 2 overlap in frequency
ABS pattern			'0000100000000100000'	MBSFN ABS. TDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2. The first/leftmost bit corresponds to the PCell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (20) divided by 10. All ABS subframes are MBSFN subframes.
	iction pattern CCH/PCFICH co			Time-domain measurement resource restriction pattern for serving cell measurements signalled to the UE in message measSubframePattern-Serv-r10 as defined in TS 36.331, clause 6.3.2. hission parameters need not be included in the
Ref	erence Measure	ernent Ch	annei	

ETSI

Table A.7.3.14.1-2: Cell specific test parameters for E-UTRAN TDD for out-of-sync radio link monitoring under time domain measurement resource restriction with MBSFN ABS

Parameter	Unit		Cell 1		Cell 2			
		T1	T2	Т3	T1	T2	T3	
E-UTRA RF Channel			1		1			
Number								
BW _{channel}	MHz		10			10		
Special subframe configuration Note1			6			6		
Uplink-downlink configuration Note2			1			1		
Correlation Matrix and Antenna Configuration			2x2 Low			2x2 Low		
OCNG Pattern defined in A.3.2.2 (TDD)			OP.2 TDD OP.6 TDD					
ρΑ, ρΒ			-3		-3			
PCFICH_RB	dB		1		Non-ABS and ABS subframe channel powers defined in			
PDCCH_RA	dB		1					
PDCCH_RB	dB		1		Table A.3.4.2.2-1.			
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB		_					
PHICH_RA	dB		-3					
PHICH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note3}	dB							
OCNG_RB ^{Note3}	dB							
SNR Note 7,8	dB	-1.3	-5.4	-12.4		5		
N_{oc}	dBm/15 kHz		-98			-98		
Propagation condition			ETU 30 Hz	 !		ETU 30 Hz		

- Note 1: For the special subframe configuration see table 4.2-1 in TS 36.211.
- Note 2: For the uplink-downlink subframe configuration see table 4.2-2 in TS 36.211.
- Note 3: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 4: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 6: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 7: SNR levels correspond to the signal quality, signal-to-interference-plus-noise ratio, on the CRS REs.
- Note 8: The SNR in the restricted measurement subframes during time periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3 respectively in Figure A.7.3.14.1-1.

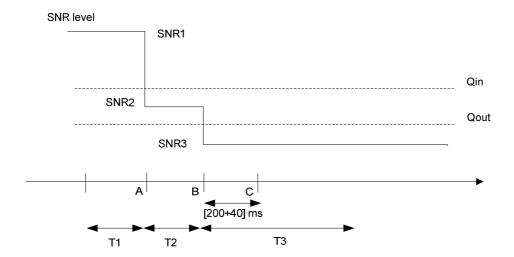


Figure A.7.3.14.1-1 SNR variation for out-of-sync testing

A.7.3.14.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (240 ms after the start of time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.15 E-UTRAN FDD Radio Link Monitoring Test for In-sync under Time Domain Measurement Resource Restriction with MBSFN ABS

A.7.3.15.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell under time domain measurement resource restriction when CRS assistance information is not provided. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.15.1-1 and A.7.3.15.1-2 below. There are two cells, cell 1 is the serving cell and cell 2 is the neighbour aggressor cell. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.15.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

MBSFN ABS pattern is configured in Cell 2 in this test. The UE is configured by higher layers with a time domain measurement restriction pattern for performing serving cell measurements. The patterns shall be configured prior to the start of T1.

Table A.7.3.15.1-1: General test parameters for E-UTRAN FDD in-sync testing under time domain measurement resource restriction with MBSFN ABS

Para	ımeter	Unit	Value	Comment
PCFICH/PDCC			R.9 FDD	As specified in clause A.3.1.2.1.
parameters				None of the PDCCH are intended for the UE under test
Serving cell			Cell 1	Cell 1 is on E-UTRA RF channel number 1
Neighbour cell			Cell 2	Cell 2 is the aggressor cell on E- UTRA RF channel number 1
Neighbour cell configuration	ABS		MBSFN ABS	As defined in Table A.3.4.2.2-2
OCNG parame	eters for Cell 1		OP.6 FDD	As specified in clause A.3.2.1.6.
OCNG parame			OP.9 FDD	As specified in clause A.3.2.1.9.
CP length			Normal	
Neighbor cell A configuration			MBSFN ABS	
E-UTRA RF C	nannel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Chani (BWchannel)	nel Bandwidth	MHz	10	
Correlation Ma Configuration	trix and Antenna		2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2
	DCI format		1C	As defined in clause 5.3.3.1.4 in TS 36.212
In sync transmission parameters	Number of Control OFDM symbols		3	In sync threshold Qin and the corresponding hypothetical PDCCH/PCFICH transmission
(Note 1)	Aggregation level	CCE	4	parameters are as specified in clause and Table 7.6.1-2
	ρΑ, ρΒ		-3	respectively.
	Ratio of PDCCH to RS EPRE	dB	-3	
	Ratio of PCFICH to RS EPRE	dB	1	
	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212
Out of sync transmission parameters	Number of Control OFDM symbols		3	Out of sync threshold Qout and the corresponding hypothetical PDCCH/PCFICH transmission
(Note 1)	Aggregation level	CCE	8	parameters are as specified in clause 7.6.1 and Table 7.6.1-1
	ρΑ, ρΒ		-3	respectively.
	Ratio of PDCCH to RS EPRE	dB	1	
	Ratio of PCFICH to RS EPRE	dB	1	
Physical cell ID			(PCI _{cell1} -PCI _{cell2}) mod 3 =	Cell IDs are chosen such that CRS
			0, PCIcell1 not equal to PCIcell2	from cells 1 and 2 overlap in frequency.
ABS pattern			01000000100000010000 0000010000001000000	FDD ABS Pattern Info IE is configured in Cell 2 as defined in clause 9.2.54 in TS 36.423 [28]. The first/leftmost bit corresponds to the subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. All ABS subframes are MBSFN subframes.
Time domain n	neasurement		010000001000000010000	MeasSubframePattern IE is

resource restriction pattern		0000010000001000000	configured in UE for serving cell measurement as defined in
			clause 6.3.6 in TS 36.331.
DRX		OFF	
Layer 3 filtering		Enabled	Counters:
			N310 = 1; N311 = 1
T310 timer	ms	2000	T310 is enabled
T311 timer	ms	1000	T311 is enabled
Periodic CQI reporting mode		PUCCH 1-0	As defined in table 7.2.2-1 in TS
			36.213.
CQI reporting periodicity	ms	2	Minimum CQI reporting periodicity
Time offset between cells	μs	3	
Propagation channel		ETU30	
T1	S	0.5	
T2	S	0.4	
T3	S	1.46	
T4	S	0.4	
T5	S	1	

Note 1: PDCCH/PCFICH corresponding to the in-sync and out of sync transmission parameters need not be included in the Reference Measurement Channel.

Table A.7.3.15.1-2: Cell specific test parameters for E-UTRAN FDD for in-sync radio link monitoring under time domain measurement resource restriction with MBSFN ABS

Parameter	Unit	Cell 1						Cell 2				
		T1	T2	T3	T4	T5	T1 T2 T3 T4 T5					
E-UTRA RF Channel		1					1					
Number												
BW _{channel}	MHz			10					10			
Correlation Matrix				2x2 Lov	/				2x2 Lo	W		
and Antenna												
Configuration												
OCNG Pattern					_							
defined in A.3.2.1			(OP.6 FD	D			(OP.9 FI	DD D		
(FDD)												
ρ _A , ρ _B				-3					-3			
PCFICH_RB	dB			1			Non-ABS and ABS subframe					
PDCCH_RA	dB			-3			channel powers defined in Table					
PDCCH_RB	dB			-3			A.3.4.2.2-2.					
PBCH_RA	dB											
PBCH_RB	dB											
PSS_RA	dB											
SSS_RA	dB			0								
PHICH_RA	dB			-3								
PHICH_RB	dB											
PDSCH_RA	dB											
PDSCH_RB	dB											
OCNG_RANote 1	dB											
OCNG_RB ^{Note 1}	dB											
SNR Note 6	dB	-1.3 -5.4 -12.4 -7.3 -1.3					5					
N_{oc}	dBm/15	-98					-98					
	kHz											
Propagation condition				ETU30				ETU30				

- Note 1: OCNG shall be used such that the resources in Cell 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 5: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.
- Note 6: The SNR in time periods T1, T2, T3, T4 and T5 of the active cell is denoted as SNR1, SNR2, SNR3, SNR4 and SNR5 respectively in figure A.7.3.15.1-1.

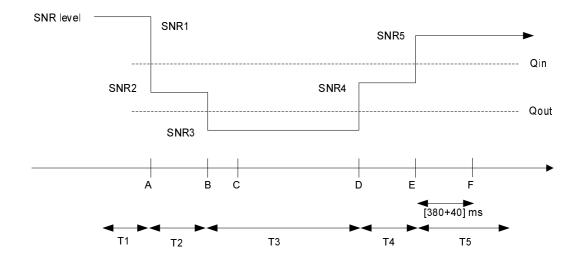


Figure A.7.3.15.1-1 SNR variation in the active cell for in-sync testing under time domain measurement resource restriction with MBSFN ABS

A.7.3.15.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.16 E-UTRAN TDD Radio Link Monitoring Test for In-sync under Time Domain Measurement Resource Restriction with MBSFN ABS

A.7.3.16.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell under time domain measurement resource restriction when CRS assistance information is not provided. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.16.1-1 and A.7.3.16.1-2 below. There are two cells, cell 1 is the serving cell and cell 2 is the neighbour aggressor cell. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.15.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms.

MBSFN ABS pattern is configured in Cell 2 in this test. The UE is configured by higher layers with a time domain measurement restriction pattern for performing serving cell measurements. The patterns shall be configured prior to the start of T1.

Table A.7.3.16.1-1: General test parameters for E-UTRAN TDD in-sync testing under time domain measurement resource restriction with MBSFN ABS

Para	ımeter	Unit	Value	Comment
PCFICH/PDCC			R.9 TDD	As specified in clause A.3.1.2.2.
parameters				None of the PDCCH are intended for the UE under test
Serving cell			Cell 1	Cell 1 is on E-UTRA RF channel number 1
Neighbour cell	Neighbour cell		Cell 2	Cell 2 is the aggressor cell on E- UTRA RF channel number 1
Neighbour cell configuration	ABS		MBSFN ABS	As defined in Table A.3.4.2.2-2
OCNG parame	eters for Cell 1		OP.2 TDD	As specified in clause A.3.2.2.2.
OCNG parame			OP.6 TDD	As specified in clause A.3.2.2.6.
CP length			Normal	
Neighbor cell A configuration			MBSFN ABS	
E-UTRA RF CI	nannel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Chan (BWchannel)	nel Bandwidth	MHz	10	
Correlation Ma Configuration	trix and Antenna		2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2
	DCI format		1C	As defined in clause 5.3.3.1.4 in TS 36.212
In sync transmission parameters	Number of Control OFDM symbols		3	In sync threshold Qin and the corresponding hypothetical PDCCH/PCFICH transmission
(Note 1)	Aggregation level	CCE	4	parameters are as specified in clause and Table 7.6.1-2
	ρΑ, ρΒ		-3	respectively.
	Ratio of PDCCH to RS EPRE	dB	-3	
	Ratio of PCFICH to RS EPRE	dB	1	
	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212
Out of sync transmission parameters	Number of Control OFDM symbols		3	Out of sync threshold Qout and the corresponding hypothetical PDCCH/PCFICH transmission
(Note 1)	Aggregation level	CCE	8	parameters are as specified in clause 7.6.1 and Table 7.6.1-1
	ρΑ, ρΒ		-3	respectively.
	Ratio of PDCCH to RS EPRE	dB	1	
	Ratio of PCFICH to RS EPRE	dB	1	
Physical cell ID			(PCI _{cell1} -PCI _{cell2}) mod 3 =	Cell IDs are chosen such that CRS
·			0, PCIcell1 not equal to PCIcell2	from cells 1 and 2 overlap in frequency.
ABS pattern			00001000000000100000	TDD ABS Pattern Info IE is configured in Cell 2 as defined in clause 9.2.54 in TS 36.423 [28]. The first/leftmost bit corresponds to the subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (20) divided by 10. All ABS subframes are MBSFN subframes.
Time domain n	neasurement		00001000000000100000	MeasSubframePattern IE is

resource restriction pattern			configured in UE for serving cell measurement as defined in clause 6.3.6 in TS 36.331.
DRX		OFF	
Layer 3 filtering		Enabled	Counters: N310 = 1; N311 = 1
T310 timer	ms	2000	T310 is enabled
T311 timer	ms	1000	T311 is enabled
Periodic CQI reporting mode		PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity	ms	1	Minimum CQI reporting periodicity
Time offset between cells	μs	3	-
Propagation channel		ETU30	
T1	S	0.5	
T2	S	0.4	
T3	S	1.46	
T4	S	0.4	
T5	S	1	

Table A.7.3.16.1-2: Cell specific test parameters for E-UTRAN TDD for in-sync radio link monitoring under time domain measurement resource restriction with MBSFN ABS

Parameter	Unit	Cell 1					Cell 2	2			
		T1 T2 T3 T4 T5				T1	T1 T2 T3 T4 T5				
E-UTRA RF Channel		1						1		•	
Number											
BW _{channel}	MHz			10					10		
Correlation Matrix				2x2 Low					2x2 Lc	w	
and Antenna											
Configuration											
Special subframe				6					6		
configuration Note1											
Uplink-downlink				1					1		
configuration Note2											
OCNG Pattern											
defined in A.3.2.2			(OP.2 TDI)			(OP.6 TI	DD	
(TDD)											
ρ _A , ρ _B				-3					-3		
PCFICH_RB	dB			11			Non-ABS and ABS subframe				
PDCCH_RA	dB			-3			channel powers defined in Table				
PDCCH_RB	dB			-3			A.3.4.2.2-2.				
PBCH_RA	dB										
PBCH_RB	dB										
PSS_RA	dB										
SSS_RA	dB			_							
PHICH_RA	dB			-3							
PHICH_RB	dB										
PDSCH_RA	dB										
PDSCH_RB	dB										
OCNG_RA ^{Note 1}	dB										
OCNG RB ^{Note 1}	dB	1									
SNR Note 8	dB	-1.3	-5.4	-12.4	-7.3	-1.3		5			
N_{oc}	dBm/15	-98 -98									
' oc	kHz										
Propagation condition		ETU30				ETU30					

- Note 1: For the special subframe configuration see table 4.2-1 in TS 36.211.
- Note 2: For the uplink-downlink configuration see table 4.2-2 in TS 36.211.
- Note 3: OCNG shall be used such that the resources in Cell 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 4: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 6: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 7: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.
- Note 8: The SNR in time periods T1, T2, T3, T4 and T5 of the active cell is denoted as SNR1, SNR2, SNR3, SNR4 and SNR5 respectively in figure A.7.3.16.1-1.

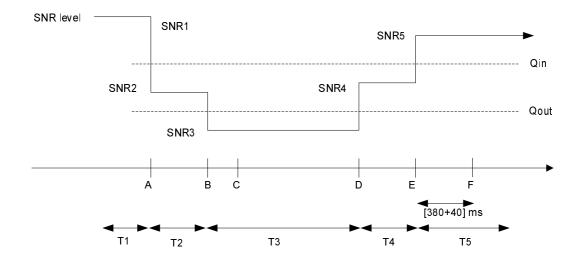


Figure A.7.3.16.1-1 SNR variation in the active cell for in-sync testing under time domain measurement resource restriction with MBSFN ABS

A.7.3.16.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.17 E-UTRAN FDD Radio Link Monitoring Test for Out-of-sync under Time Domain Measurement Resource Restriction with CRS Assistance Information and Non-MBSFN ABS

A.7.3.17.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell under time domain measurement resource restriction with CRS assistance information. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.17.1-1 and A.7.3.17.1-2 below. There are three active cells in the test: Cell 1 is the PCell cell and Cell 2 and 3 are the neighbour cells. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.17.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

Non-MBSFN ABS pattern is configured in both Cell 2 and Cell 3 in this test. The UE is configured by higher layers with a time domain measurement restriction pattern for performing Pcell measurements. The UE is also provided via higher layers with the CRS assistance information for Cell 2 and Cell 3, which shall be valid during T1, T2 and T3 in this test. The non-MBSFN ABS pattern, the time domain measurement resource restriction pattern and the CRS assistance information shall be configured prior to the start of T1.

Table A.7.3.17.1-1: General test parameters for E-UTRAN FDD out-of-sync testing under time domain measurement resource restriction with CRS Assistance Information and Non-MBSFN ABS

Para	meter	Unit	Value	Comment
PCFICH/PDC	CH/PHICH		R.7 FDD	As specified in clause A.3.1.2.1.
parameters				None of the PDCCH are intended for the UE under test
OCNG parame	eters		OP.6 FDD	As specified in section A.3.2.1.6.
PCell			Cell 1	Cell 1 is on E-UTRA RF channel number 1
Neighbor cells			Cell 2 and Cell 3	Both of aggressor cells on E-UTRA RF channel number 1
Neighbor cell a configuration	ABS		Non-MBSFN ABS	As defined in Table A.3.4.1.2-1
CP length			Normal	
E-UTRA RF C	hannel		1	One E-UTRA FDD carrier frequency is used.
Number				, ,
E-UTRA Chan (BW _{channel})	nel Bandwidth	MHz	10	
Correlation Ma	atrix and		2x2 Low	Correlation Matrix and Antenna Configuration
Antenna Confi	guration			are defined in TS 36.101 [5] Annex B.2.3.2
Out of sync	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212
transmission	Number of		2	Out of sync threshold Q _{out} and the
parameters	Control			corresponding hypothetical PDCCH/PCFICH
(Note 1)	OFDM			transmission parameters are as specified in
	symbols	005		clause 7.6.1 and Table 7.6.1-1 respectively.
	Aggregation level	CCE	8	
	ρΑ, ρΒ		-3	
	Ratio of	dB	1	
	PDCCH to RS EPRE			
	Ratio of	dB	1	
	PCFICH to			
	RS EPRE			
DRX			OFF	
Layer 3 filterin	g		Enabled	Counters:: N310 = 1; N311 = 1
T310 timer		ms	0	T310 is disabled
T311 timer	eporting mode	ms	1000 PUCCH 1-0	T311 is enabled As defined in table 7.2.2-1 in TS 36.213.
CQI reporting		ms	2	Minimum CQI reporting periodicity
Time offset be			Cell 2 time offset with	
1 5 500 50	tween cells	μs		Three synchronous cells
5 511551 50	tween cells	μs	respect to Cell 1: 3	Three synchronous cells
5 5501 50	tween cells	μѕ	respect to Cell 1: 3 Cell 3 time offset with	Three synchronous cells
		·	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2	Three synchronous cells
Frequency shi		μs	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2 Cell 2 frequency shift with	Three synchronous cells
		·	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2 Cell 2 frequency shift with respect to Cell 1: 300	Three synchronous cells
Frequency shi		·	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2 Cell 2 frequency shift with respect to Cell 1: 300 Cell 3 frequency shift with	Three synchronous cells
Frequency shi		·	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2 Cell 2 frequency shift with respect to Cell 1: 300	Three synchronous cells
Frequency shi cells		Hz	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2 Cell 2 frequency shift with respect to Cell 1: 300 Cell 3 frequency shift with respect to Cell 1: -100 1	Three synchronous cells
Frequency shi cells T1 T2		Hz S S	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2 Cell 2 frequency shift with respect to Cell 1: 300 Cell 3 frequency shift with respect to Cell 1: -100 1 0.4	Three synchronous cells
Frequency shi cells		Hz	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2 Cell 2 frequency shift with respect to Cell 1: 300 Cell 3 frequency shift with respect to Cell 1: -100 1 0.4 0.5	
Frequency shi cells T1 T2		Hz S S	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2 Cell 2 frequency shift with respect to Cell 1: 300 Cell 3 frequency shift with respect to Cell 1: -100 1 0.4 0.5 (PCI _{cell1} -PCI _{cell2}) mod3 = 0	Cell PCIs are selected so that all conditions are
Frequency shi cells T1 T2	ft between	Hz S S	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2 Cell 2 frequency shift with respect to Cell 1: 300 Cell 3 frequency shift with respect to Cell 1: -100 1 0.4 0.5 (PCI _{cell1} -PCI _{cell2}) mod3 = 0 (PCI _{cell1} -PCI _{cell3}) mod3!= 0	
Frequency shi cells T1 T2 T3	ft between	Hz S S	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2 Cell 2 frequency shift with respect to Cell 1: 300 Cell 3 frequency shift with respect to Cell 1: -100 1 0.4 0.5 (PCI _{cell1} -PCI _{cell2}) mod3 = 0 (PCI _{cell1} -PCI _{cell3}) mod3!= 0 PCI _{cell1} not equal to	Cell PCIs are selected so that all conditions are
Frequency shi cells T1 T2 T3 Physical cell II	ft between	Hz S S	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2 Cell 2 frequency shift with respect to Cell 1: 300 Cell 3 frequency shift with respect to Cell 1: -100 1 0.4 0.5 (PCI _{cell1} -PCI _{cell2}) mod3 = 0 (PCI _{cell1} -PCI _{cell3}) mod3!= 0 PCI _{cell1} not equal to PCI _{cell2}	Cell PCIs are selected so that all conditions are met
Frequency shi cells T1 T2 T3	ft between	Hz S S	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2 Cell 2 frequency shift with respect to Cell 1: 300 Cell 3 frequency shift with respect to Cell 1: -100 1 0.4 0.5 (PCI _{cell1} -PCI _{cell2})mod3 = 0 (PCI _{cell1} -PCI _{cell3})mod3!= 0 PCI _{cell1} not equal to PCI _{cell2} '10000000100000001000	Cell PCIs are selected so that all conditions are met FDD ABS Pattern Info IE, as defined in TS
Frequency shi cells T1 T2 T3 Physical cell II	ft between	Hz S S	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2 Cell 2 frequency shift with respect to Cell 1: 300 Cell 3 frequency shift with respect to Cell 1: -100 1 0.4 0.5 (PCI _{cell1} -PCI _{cell2}) mod3 = 0 (PCI _{cell1} -PCI _{cell3}) mod3!= 0 PCI _{cell1} not equal to PCI _{cell2}	Cell PCIs are selected so that all conditions are met FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. The first/leftmost bit
Frequency shi cells T1 T2 T3 Physical cell II	ft between	Hz S S	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2 Cell 2 frequency shift with respect to Cell 1: 300 Cell 3 frequency shift with respect to Cell 1: -100 1 0.4 0.5 (PCI _{cell1} -PCI _{cell2})mod3 = 0 (PCI _{cell1} -PCI _{cell3})mod3!= 0 PCI _{cell1} not equal to PCI _{cell2} '10000000100000001000	Cell PCIs are selected so that all conditions are met FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. The first/leftmost bit corresponds to the PCell subframe #0 of the
Frequency shi cells T1 T2 T3 Physical cell II	ft between	Hz S S	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2 Cell 2 frequency shift with respect to Cell 1: 300 Cell 3 frequency shift with respect to Cell 1: -100 1 0.4 0.5 (PCI _{cell1} -PCI _{cell2})mod3 = 0 (PCI _{cell1} -PCI _{cell3})mod3!= 0 PCI _{cell1} not equal to PCI _{cell2} '10000000100000001000	Cell PCIs are selected so that all conditions are met FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. The first/leftmost bit corresponds to the PCell subframe #0 of the radio frame satisfying SFN mod x = 0, where x
Frequency shi cells T1 T2 T3 Physical cell II	ft between	Hz S S	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2 Cell 2 frequency shift with respect to Cell 1: 300 Cell 3 frequency shift with respect to Cell 1: -100 1 0.4 0.5 (PCI _{cell1} -PCI _{cell2})mod3 = 0 (PCI _{cell1} -PCI _{cell3})mod3!= 0 PCI _{cell1} not equal to PCI _{cell2} '10000000100000001000	Cell PCIs are selected so that all conditions are met FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. The first/leftmost bit corresponds to the PCell subframe #0 of the
Frequency shi cells T1 T2 T3 Physical cell II	ft between	Hz S S	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2 Cell 2 frequency shift with respect to Cell 1: 300 Cell 3 frequency shift with respect to Cell 1: -100 1 0.4 0.5 (PCI _{cell1} -PCI _{cell2})mod3 = 0 (PCI _{cell1} -PCI _{cell3})mod3!= 0 PCI _{cell1} not equal to PCI _{cell2} '10000000100000001000	Cell PCIs are selected so that all conditions are met FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. The first/leftmost bit corresponds to the PCell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. No MBSFN subframes are configured in the ABS subframes.
Frequency shi cells T1 T2 T3 Physical cell II	ft between	Hz S S	respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2 Cell 2 frequency shift with respect to Cell 1: 300 Cell 3 frequency shift with respect to Cell 1: -100 1 0.4 0.5 (PCI _{cell1} -PCI _{cell2})mod3 = 0 (PCI _{cell1} -PCI _{cell3})mod3!= 0 PCI _{cell1} not equal to PCI _{cell2} '10000000100000001000	Cell PCIs are selected so that all conditions are met FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. The first/leftmost bit corresponds to the PCell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. No MBSFN subframes are configured in the ABS

Time domain measurement resource restriction pattern		'10000000100000001000 0000100000001000000	Time domain measurement resource restriction pattern for serving cell measurement signalled to the UE in message measSubframePatternPCell-r10 as defined in TS 36.331, clause 6.3.2.
CRS	physCellId	see PCI conditions above	The CRS assistance information is provided for
assistance information	antennaPort sCount	an2	Cell 2 and Cell 3 in CRS-AssistanceInfo. It includes a single MBSFN-SubframeConfig
mbsfn- SubframeCo nfigList		oneFrame = '000000'	element with subframe allocation oneFrame='000000'
			nission parameters need not be included in the
Ref	ference Measurem	nent Channel	

Table A.7.3.17.1-2: Cell specific test parameters for E-UTRAN FDD for out-of-sync radio link monitoring under time domain measurement resource restriction with CRS Assistance Information and Non-MBSFN ABS

Parameter	Unit		Cell 1		Cell 2	Cell 3
		T1	T2	T3	T1-T3	T1-T3
E-UTRA RF Channel		1			1	1
Number						
BW _{channel}	MHz		10		10	10
Correlation Matrix			2x2 Low		2x2 Low	2x2 Low
and Antenna						
Configuration						
OCNG Pattern						
defined in A.3.2.1.6			OP.6 FDD		OP.6 FDD	OP.6 FDD
(FDD)					_	
ρа, ρв			-3		-3	-3
PCFICH_RB	dB		11		Non-ABS and	Non-ABS and
PDCCH_RA	dB		11		ABS subframe	ABS subframe
PDCCH_RB	dB		1		channel powers	channel powers
PBCH_RA	dB				defined in Table	defined in Table
PBCH_RB	dB				A.3.4.1.2-1.	A.3.4.1.2-1.
PSS_RA	dB					
SSS_RA	dB		_			
PHICH_RA	dB		-3			
PHICH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note1}	dB					
OCNG_RB ^{Note1}	dB					
SNR Note 6	dB	-1.5	-1.5 -5.2 -13.7		4	2
N_{oc}	dBm/15		-98		-98	-98
	kHz					
Propagation condition			ETU 30 Hz		ETU 30 Hz	ETU 30 Hz

- Note 1: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 5: SNR levels correspond to the signal quality, signal-to-interference-plus-noise ratio, on the CRS RFs
- Note 6: The SNR in the restricted measurement subframes during time periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3 respectively in figure A.7.3.17.1-1.

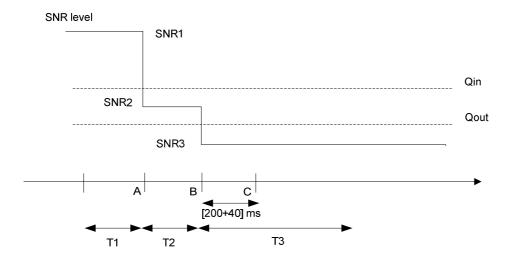


Figure A.7.3.17.1-1 SNR variation for out-of-sync testing

A.7.3.17.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (240 ms after the start of time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.18 E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync under Time Domain Measurement Resource Restriction with CRS Assistance Information and Non-MBSFN ABS

A.7.3.18.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the serving cell under time domain measurement resource restriction with CRS assistance information. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.18.1-1 and A.7.3.18.1-2 below. There are three active cells in the test: Cell 1 is the PCell cell and Cell 2 and 3 are the neighbour cells. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.18.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

Non-MBSFN ABS pattern is configured in both Cell 2 and Cell 3 in this test. The UE is configured by higher layers with a time domain measurement restriction pattern for performing Pcell measurements. The UE is also provided via higher layers with the CRS assistance information for Cell 2 and Cell 3, which shall be valid during T1, T2 and T3 in this test. The non-MBSFN ABS pattern, the time domain measurement resource restriction pattern and the CRS assistance information shall be configured prior to the start of T1.

Table A.7.3.18.1-1: General test parameters for E-UTRAN TDD out-of-sync testing under time domain measurement resource restriction with CRS Assistance Information and Non-MBSFN ABS

Para	meter	Unit	Value	Comment
PCFICH/PDC	CH/PHICH		R.7.TDD	As specified in clause A.3.1.2.2.
parameters				None of the PDCCH are intended for the UE under test
OCNG parame	eters		OP.2 TDD	As specified in clause A.3.2.2.2
PCell	0.10.0		Cell 1	Cell 1 is on E-UTRA RF channel number 1
Neighbor cells	;		Cell 2 and Cell 3	Both of aggressor cells on E-UTRA RF channel number 1
Neighbor cell a configuration	ABS		Non-MBSFN ABS	As defined in Table A.3.4.1.2-1
CP length			Normal	
E-UTRA RF C	hannel		1	One E-UTRA TDD carrier frequency is used.
Number				, ,
E-UTRA Chan (BW _{channel})	nel Bandwidth	MHz	10	
Correlation Ma			2x2 Low	Correlation Matrix and Antenna Configuration
Antenna Confi				are defined in TS 36.101 [5] Annex B.2.3.2
Out of sync	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212
transmission	Number of		2	Out of sync threshold Qout and the
parameters	Control			corresponding hypothetical PDCCH/PCFICH
(Note 1)	OFDM			transmission parameters are as specified in
	symbols			clause 7.6.1 and Table 7.6.1-1 respectively.
	Aggregation level	CCE	8	
	ρа, ρв		-3	
	Ratio of PDCCH to RS EPRE	dB	1	
	Ratio of PCFICH to	dB	1	
	RS EPRE			
DRX			OFF	
Layer 3 filterin	g		Enabled	Counters:: N310 = 1; N311 = 1
T310 timer		ms	0	T310 is disabled
T311 timer		ms	1000	T311 is enabled
	eporting mode		PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting		ms	1	Minimum CQI reporting periodicity
Time offset be	tween cells	μs	Cell 2 time offset with respect to Cell 1: 3 Cell 3 time offset with respect to Cell 1: 2	Three synchronous cells
Frequency shi cells	ft between	Hz	Cell 2 frequency shift with respect to Cell 1: 300 Cell 3 frequency shift with respect to Cell 1: -100	
T1		s	1	
T2		s	0.4	
T3		S	0.5	
			$(PCI_{cell1}-PCI_{cell2})$ mod3 = 0	Cell PCIs are selected so that all conditions are
Physical cell II	Ds		(PCI _{cell1} -PCI _{cell3})mod3!= 0 PCI _{cell1} not equal to PCI _{cell2}	met
ABS pattern			'0000100000000100000'	TDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. The first/leftmost bit corresponds to the PCell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (20) divided by 10. No MBSFN subframes are configured in the ABS subframes. Configured in both Cell 2 and Cell 3 prior to the start of T1.

Time domain measurement resource restriction pattern		'0000100000000100000'	Time domain measurement resource restriction pattern for serving cell measurement signalled to the UE in message measSubframePatternPCell-r10 as defined in TS 36.331, clause 6.3.2.
CRS	physCellId	see PCI conditions above	The CRS assistance information is provided for
assistance information	antennaPort sCount	an2	Cell 2 only in CRS-AssistanceInfo. It includes a single MBSFN-SubframeConfig element with
	mbsfn- SubframeCo nfigList	oneFrame = '000000'	subframe allocation oneFrame='000000'
			nission parameters need not be included in the
Re	ference Measurer	nent Channel	

Table A.7.3.18.1-2: Cell specific test parameters for E-UTRAN TDD for out-of-sync radio link monitoring under time domain measurement resource restriction with CRS Assistance Information and Non-MBSFN ABS

Parameter	Unit	Cell 1			Cell 2	Cell 3										
		T1	T2	Т3	T1-T3	T1-T3										
E-UTRA RF Channel		1			1	1										
Number																
BW _{channel}	MHz		10		10	10										
Special subframe			6		6	6										
configuration Note1																
Uplink-downlink			1		1	1										
configuration ^{Note2}																
Correlation Matrix			2x2 Low		2x2 Low	2x2 Low										
and Antenna																
Configuration																
OCNG Pattern																
defined in A.3.2.2.2			OP.2 TDD		OP.2 TDD	OP.2 TDD										
(TDD)					0	0										
ρα, ρΒ	I.D.		-3		-3	-3										
PCFICH_RB	dB		1		Non-ABS and	Non-ABS and										
PDCCH_RA	dB				ABS subframe	ABS subframe										
PDCCH_RB	dB		1		channel powers	channel powers										
PBCH_RA	dB				defined in Table A.3.4.1.2-1.	defined in Table A.3.4.1.2-1.										
PBCH_RB	dB				A.3.4.1.2-1.	A.3.4.1.2-1.										
PSS_RA	dB															
SSS_RA	dB		-3													
PHICH_RA	dB		-3													
PHICH_RB	dB															
PDSCH_RA	dB															
PDSCH_RB	dB															
OCNG_RA ^{Note1}	dB															
OCNG_RB ^{Note1}	dB															
SNR Note 6	dB	-1.5													4	2
N_{oc}	dBm/15		-98		-98		-98	-98								
	kHz				ETIL COLL	FT110011										
Propagation condition		<i>c.</i>	ETU 30 Hz		ETU 30 Hz	ETU 30 Hz										

- Note 1: For the special subframe configuration see table 4.2-1 in TS 36.211.
- Note 2: For the uplink-downlink subframe configuration see table 4.2-2 in TS 36.211.
- Note 3: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 4: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 6: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 7: SNR levels correspond to the signal quality, signal-to-interference-plus-noise ratio, on the CRS REs
- Note 8: The SNR in the restricted measurement subframes during time periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3 respectively in Figure A.7.3.18.1-1.

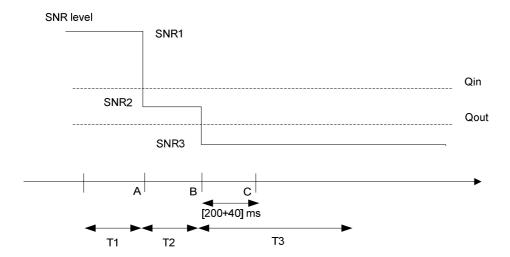


Figure A.7.3.18.1-1 SNR variation for out-of-sync testing

A.7.3.18.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (240 ms after the start of time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.19 E-UTRAN FDD Radio Link Monitoring Test for In-sync under Time Domain Measurement Resouce Restriction with CRS assistance information and Non-MBSFN ABS

A.7.3.19.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell under time domain measurement resource restriction with CRS assistance information. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.19.1-1 and A.7.3.19.1-2 below. There are three active cells in the test: Cell 1 is the PCell cell and Cell 2 and 3 are the neighbour cells. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.19.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

Non-MBSFN ABS pattern is configured in both Cell 2 and Cell 3 in this test. The UE is configured by higher layers with a time domain measurement restriction pattern for performing PCell measurements. The UE is also provided via higher layers with the CRS assistance information for Cell 2 and Cell 3, which shall be valid during T1, T2, T3, T4 and T5 in this test. The Non-MBSFN ABS pattern, the time domain measurement resource restriction pattern and the CRS assistance information shall be configured prior to the start of T1.

Table A.7.3.19.1-1: General test parameters for E-UTRAN FDD in-sync radio link monitoring test

Parameter		Unit		Comment		
- uru		0		Value Test 1		Johnnent
			Cell 1	Cell 2	Cell 3	
PCFICH/PDC0 parameters	CH/PHICH		R.9 FDD	R.9 FDD	R.9 FDD	As specified in section A.3.1.2.1. None of the PDCCH are intended for the UE under test
OCNG parame	OCNG parameters		OP.6 FDD	OP.6 FDD	OP.6 FDD	As specified in section A.3.2.1.6.
Active cell			PCell	Neighbor Cell	Neighbor Cell	Cell 1, Cell 2 and Cell 3 are on E-UTRA RF channel number 1
CP length			Normal	Normal	Normal	
	hannel Number		1	1	1	One E-UTRA FDD carrier frequency is used.
E-UTRA Chan (BW _{channel})	nel Bandwidth	MHz	10	10	10	
Correlation Ma Antenna Confi			2x2 Low	2x2 Low	2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2
Neighbor Cell a configuration	ABS		N/A	Non-MBSFN A	ABS	As defined in Table A.3.4.1.2-2
ABS Pattern Time domain n resource restri			'10000001 000000100 000010000 000100000 0'	'10000001 000000100 0 0000100000 001000000	\(\frac{100000001}{0000000100}\) \(\frac{0}{0}\) \(\frac{0000100000}{0010000000}\) \(\frac{1}{0}\) \(\frac{1}\) \(\frac{1}{0}\) \(\frac{1}{0}\) \(\frac{1}\) \(\frac{1}{0}\) \(\frac{1}\) \(\frac{1}\) \(\frac	FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. The first/leftmost bit corresponds to the Pcell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. No MBSFN subframes are cofigured in the ABS subframes. Configured in both Cell 2 and Cell 3 prior to the start of T1. Time domain measurement resource restriction pattern for serving cell measurement signalled to the UE in message measSubframePatternPCe II-r10 as defined in TS
CRS assistant information	physCellId antennaPorts Count		N/A	see PCI conditions below an2	see PCI conditions below an2	36.331, clause 6.3.2. The CRS assistance information is provided for Cell 2 and Cell 3 in CRS-AssistanceInfo. It includes a single MBSFN-
	mbsfn- SubframeCo nfigList			oneFrame = '000000'	oneFrame = '000000'	SubframeConfig element with subframe allocation oneFrame='000000'
Time offset bet (With respect t		us	0	3	2	
	ft between cells	Hz	0	300	-100	
Physical Cell II			PCI _{cell1}	$ \begin{array}{l} (PCI_{cell1}\text{-}\\ PCI_{cell2})\\ mod3=0,\\ PCI_{cell1} \ not\\ equal\ to \end{array} $	(PCI _{cell1} - PCI _{cell3}) mod3! = 0	Cell PCIs are selected so that all conditions are met

				PCI _{cell2}			
In sync transmis	sion	DCI	1C	1C	1C		
parameters (Not		format					
In sync transmission	Number of Control OFDM symbols		3	3	3	As defined in section 5.3.3.1.4 in TS 36.212	
parameters (Note 1)	Aggregatio n level	CCE	4	4	4	In sync threshold Q _{in} and the corresponding	
	ρ _Α , ρ _Β		-3	-3	-3	hypothetical	
	Ratio of PDCCH to RS EPRE		-3	Non-ABS and subframe cha defined in Tab		PDCCH/PCFICH transmission parameters are as specified in section	
	Ratio of PCFICH to RS EPRE		1			and Table 7.6.1-2 respectively.	
	DCI format		1A	1A	1A		
Out of sync transmission parameters	Number of Control OFDM symbols		3	3	3	As defined in section 5.3.3.1.3 in TS 36.212	
(Note 1)	Aggregatio n level	CCE	8	8	8	Out of sync threshold Q _{out} and the corresponding	
	ρа, ρв		-3	-3	-3	hypothetical	
	Ratio of PDCCH to RS EPRE	dB	1	Non-ABS and ABS subframe channel powers defined in Table A.3.4.1.2-2.		PDCCH/PCFICH transmission parameters are as specified in section	
	Ratio of PCFICH to RS EPRE	dB	1			7.6.1 and Table 7.6.1-1 respectively.	
DRX			OFF	OFF	OFF		
Layer 3 filtering			Enabled	Disable	Disable	Counters: N310 = 1; N311 = 1	
T310 timer		ms	2000	N/A	•	T310 is enabled	
T311 timer		ms	1000			T311 is enabled	
Periodic CQI reporting mode			PUCCH 1-0			As defined in table 7.2.2-1 in TS 36.213.	
CQI reporting periodicity		ms	2			Minimum CQI reporting periodicity	
T1		S	0.5	N/A			
T2		S	0.4				
T3		S	1.46				
T4		S	0.4				
T5		S	1				

Table A.7.3.19.1-2: Cell specific test parameters for E-UTRAN FDD in-sync radio link monitoring test

Parameter	Unit	Test 1						
				Cell1			Cell2	Cell3
		T1	T2	T3	T4	T5	T1-T5	T1-T5
E-UTRA RF Channel				1			1	1
Number								
BW _{channel}	MHz			10			10	10
Correlation Matrix				2x2 Low			2x2 Low	2x2 Low
and Antenna								
Configuration								
PCFICH/PDCCH/PHI				R.9 FDD			R.9 FDD	R.9 FDD
CH parameters								
OCNG Pattern								
defined in A.3.2.1				OP.6 FDD)		OP.6 FDD	OP.6 FDD
(FDD)								
ρΑ, ρΒ				-3			-3	-3
PCFICH_RB	dB			1				ABS subframe
PDCCH_RA	dB							ers defined in
PDCCH_RB	dB						Table A.	3.4.1.2-2.
PBCH_RA	dB							
PBCH_RB	dB			0				
PSS_RA	dB			-3				
SSS_RA	dB							
PHICH_RA	dB							
PHICH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
SNR Note 6	dB	-1.5	-5.2	-13.7	-8.6	-1.5	4	2
N_{oc}	dBm/15			-98			-98	-98
1 oc	kHz							
Propagation condition	Hz			ETU 30			ETU 30	ETU 30

- Note 1: OCNG shall be used such that the resources in cell 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 5: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.
- Note 6: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and SNR5 respectively in figure A.7.3.19.1-1.

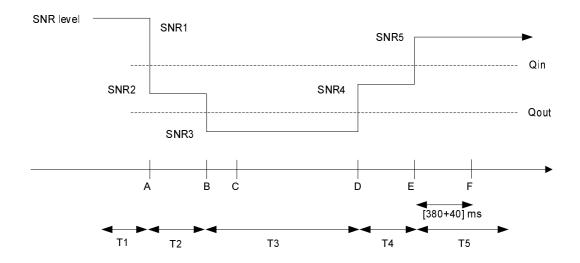


Figure A.7.3.19.1-1 SNR variation for in-sync testing

A.7.3.19.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.20 E-UTRAN TDD Radio Link Monitoring Test for In-sync under Time Domain Measurement Resouce Restriction with CRS assistance information and Non-MBSFN ABS

A.7.3.20.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell under time domain measurement resource restriction with CRS assistance information. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.20.1-1 and A.7.3.20.1-2 below. There are three active cells in the test: Cell 1 is the PCell and Cell 2 and 3 are the Neighbor cells. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.20.1-1 shows the variation of the downlink SNR in the PCell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

Non-MBSFN ABS pattern is configured in both Cell 2 and Cell 3 in this test. The UE is configured by higher layers with a time domain measurement restriction pattern for performing PCell measurements. The UE is also provided via higher layers with the CRS assistance information for Cell 2 and Cell 3, which shall be valid during T1, T2, T3, T4 and T5 in this test. The Non-MBSFN ABS pattern, the time domain measurement resource restriction pattern and the CRS assistance information shall be configured prior to the start of T1.

Table A.7.3.20.1-1: General test parameters for E-UTRAN TDD in-sync radio link monitoring test

Parai	meter	Unit		Value		Comment	
				Test 1		j	
			Cell 1	Cell 2	Cell 3		
PCFICH/PDCC parameters	CH/PHICH		R.9 TDD	R.9 TDD	R.9 TDD	As specified in section A.3.1.2.2. None of the PDCCH are intended for the UE under test	
OCNG parame	eters		OP.2 TDD	OP.2 TDD	OP.2 TDD	As specified in section A.3.2.2.2.	
Active cell			PCell	Neighbor Cell	Neighbor Cell	Cell 1, Cell 2 and Cell 3 are on E-UTRA RF channel number 1	
CP length			Normal	Normal	Normal		
	nannel Number		1	1	1	One E-UTRA TDD carrier frequency is used.	
E-UTRA Chani (BW _{channel})	nel Bandwidth	MHz	10	10	10		
Correlation Ma Antenna Config	guration		2x2 Low	2x2 Low	2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2	
Neighbor Cell / configuration	ABS		N/A	Non-MBSFN	ABS	As defined in Table A.3.4.1.2-1	
ABS Pattern			N/A	'000010000 0000010000 0'	'000010000 000010000 0'	TDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2 and Cell 3. The first/leftmost bit corresponds to the Pcell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (20) divided by 10. No MBSFN subframes are configured in the ABS subframes.	
Time domain n resource restric			'000010000 0000010000 0'	N/A	N/A	Time domain measurement resource restriction pattern for serving cell measurement signalled to the UE in message measSubframePatternPCe II-r10 as defined in TS 36.331, clause 6.3.2.	
CRS assistant	physCellId		N/A	see PCI conditions	see PCI conditions	The CRS assistance information is provided for	
information			_]	below	below	Cell 2 and Cell 3 in CRS-	
	antennaPorts Count			an2 an2		AssistanceInfo. It includes a single MBSFN-	
	mbsfn- SubframeCo nfigList			oneFrame = '000000'	oneFrame = '000000'	SubframeConfig element with subframe allocation oneFrame='000000'	
Time offset from		us	0	3	2		
Frequency offs		Hz	0	300	-100		
Physical Cell II	ט		PCI _{cell1}	$ \begin{aligned} &(\text{PCI}_{\text{cell1}}\text{-}\\ &\text{PCI}_{\text{cell2}})\\ &\text{mod3} = 0,\\ &\text{PCI}_{\text{cell1}} \text{ not}\\ &\text{equal to}\\ &\text{PCI}_{\text{cell2}} \end{aligned} $	(PCI _{cell3}) PCI _{cell3}) mod3! = 0	Cell PCIs are selected so that all conditions are met	

	DCI format		1C	1C	1C	As defined in section 5.3.3.1.4 in TS 36.212	
In sync transmission parameters	Number of Control OFDM symbols		3	3	3	In sync threshold Q _{in} and the corresponding hypothetical PDCCH/PCFICH	
(Note 1)	Aggregatio n level	CCE	4	4	4	transmission parameters are as specified in section	
	ρ _Α , ρ _Β		-3	-3	-3	and Table 7.6.1-2	
	Ratio of PDCCH to RS EPRE		-3	Non-ABS and subframe cha defined in Tal		respectively.	
	Ratio of PCFICH to RS EPRE		1				
	DCI format		1A	1A	1A	As defined in section 5.3.3.1.3 in TS 36.212	
Out of sync transmission parameters (Note 1)	Number of Control OFDM symbols		3	3 3		Out of sync threshold Q _{out} and the corresponding hypothetical PDCCH/PCFICH	
	Aggregatio n level	CCE	8	8	8	transmission parameters are as specified in section	
	ρ _A , ρ _B		-3	-3	-3	7.6.1 and Table 7.6.1-1	
	Ratio of PDCCH to RS EPRE	dB	1	Non-ABS and subframe cha defined in Tal		respectively.	
	Ratio of PCFICH to RS EPRE	dB	1				
DRX			OFF	OFF	OFF		
Layer 3 filtering			Enabled	Disable	Disable	Counters: N310 = 1; N311 = 1	
T310 timer		ms	2000	N/A	•	T310 is enabled	
T311 timer		ms	1000			T311 is enabled	
Periodic CQI reporting mode			PUCCH 1-0			As defined in table 7.2.2-1 in TS 36.213.	
CQI reporting periodicity		ms	1			Minimum CQI reporting periodicity	
T1		S	0.5	N/A			
T2		S	0.4				
T3		S	1.46				
T4	·	S	0.4]			
T5		S	1				

Table A.7.3.20.1-2: Cell specific test parameters for E-UTRAN TDD in-sync radio link monitoring test

Parameter	Unit	Test 1				
		Cell1	Cell2 Cell3			
		T1 T2 T3 T4 T5	T1-T5 T1-T5			
E-UTRA RF Channel		1	1 1			
Number						
BW _{channel}	MHz	10	10 10			
Correlation Matrix		2x2 Low	2x2 Low 2x2 Low			
and Antenna						
Configuration						
Special subframe		6	6 6			
configuration Note 1						
Uplink-downlink		1	1 1			
configuration Note 2						
PCFICH/PDCCH/PHI		R.9 TDD	R.9 TDD R.9 TDD			
CH parameters						
OCNG Pattern						
defined in A.3.2.2		OP.2 TDD	OP.2 TDD OP.2 TDD			
(TDD)		_				
ρа, ρв		-3	-3 -3			
PCFICH_RB	dB	1	Non-ABS and ABS subframe			
PDCCH_RA	dB		channel powers defined in			
PDCCH_RB	dB		Table A.3.4.1.2-2.			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB	-3				
SSS_RA	dB					
PHICH_RA	dB					
PHICH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 3}	dB					
OCNG_RB ^{Note 3}	dB					
SNR Note 8	dB	-1.5 -5.2 -13.7 -8.6 -1.5	4 2			
N_{oc}	dBm/15	-98	-98 -98			
	kHz					
Propagation condition	Hz	ETU 30	ETU 30 ETU 30			
N		"				

Note 1: For the special subframe configuration see table 4.2-1 in 3GPP TS 36.211.

SNR4 and SNR5 respectively in figure A.7.3.20.1-1.

Note 2: For the uplink-downlink configuration see table 4.2-2 in 3GPP TS 36.211.

Note 3: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.

Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.

Note 6: The signal contains PDCCH for UEs other than the device under test as part of OCNG.

Note 7: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.

Note 8: The SNR in time periods T1, T2, T3, T4 and T5 of active cell is denoted as SNR1, SNR2, SNR3,

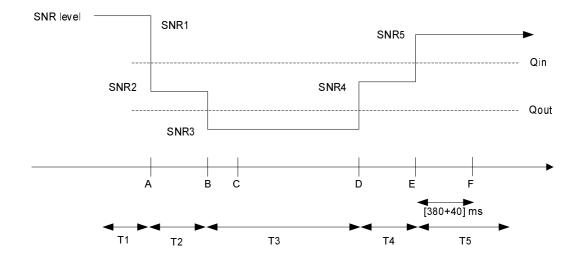


Figure A.7.3.20.1-1 SNR variation for in-sync testing

A.7.3.20.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.21 E-UTRAN FDD Radio Link Monitoring Test for In-sync under Time Domain Measurement Resouce Restriction with CRS assistance information and MBSFN ABS

A.7.3.21.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell under time domain measurement resource restriction with CRS assistance information and MBSFN ABS. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.21.1-1 and A.7.3.21.1-2 below. There are three active cells in the test: Cell 1 is the PCell cell and Cell 2 and 3 are the neighbour cells. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.21.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

MBSFN ABS pattern is configured in both Cell 2 and Cell 3 in this test. The UE is configured by higher layers with a time domain measurement restriction pattern for performing PCell measurements. The UE is also provided via higher layers with the CRS assistance information for Cell 2 and Cell 3, which shall be valid during T1, T2, T3, T4 and T5 in this test. The MBSFN ABS pattern, the time domain measurement resource restriction pattern and the CRS assistance information shall be configured prior to the start of T1.

Table A.7.3.21.1-1: General test parameters for E-UTRAN FDD in-sync radio link monitoring test

Para	meter	Unit	Value			Comment	
				Test 1			
DOELOL L'ODOG	211/2111211		Cell 1	Cell 2	Cell 3	A	
PCFICH/PDC0 parameters	CH/PHICH		R.9 FDD	R.9 FDD	R.9 FDD	As specified in section A.3.1.2.1. None of the PDCCH are intended for the UE under test	
OCNG parame	OCNG parameters		OP.6 FDD	OP.9 FDD	OP.9 FDD	As specified in section A.3.2.1.	
Active cell			PCell	Neighbor Cell	Neighbor Cell	Cell 1, Cell 2 and Cell 3 are on E-UTRA RF channel number 1	
CP length			Normal	Normal	Normal		
	hannel Number		1	1	1	One E-UTRA FDD carrier frequency is used.	
E-UTRA Chan (BW _{channel})	nel Bandwidth	MHz	10	10	10		
Correlation Ma Antenna Confi			2x2 Low	2x2 Low	2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2	
Neighbor Cell configuration	ABS		N/A	MBSFN ABS		As defined in Table A.3.4.2.2-2	
ABS Pattern			N/A	'01000001 000000100 000000100 0000100000 0'	'010000001 0000000100 0000000100 0000100000 0'	FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. The first/leftmost bit corresponds to the Pcell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. MBSFN subframes are cofigured in the ABS subframes configured in Cell 2 and Cell 3 prior to the start of T1.	
Time domain r resource restri	ction pattern		'010000001 0000000100 0000000100 0000100000 0'	N/A	N/A	Time domain measurement resource restriction pattern for serving cell measurement signalled to the UE in message measSubframePatternPCe II-r10 as defined in TS 36.331, clause 6.3.2.	
CRS assistance information	physCellId		N/A	see PCI conditions	see PCI conditions	The CRS assistance information is provided for Cell 2 and Cell 3 in CRS-	
IIIOIIIIAUOII	antennaPorts an2 an2 count			AssistanceInfo. It includes a single MBSFN-			
	mbsfn-				SubframeConfig element with subframe allocation		
	nfigList			"100001000 1000001000 01000'	100001000 1000001000 01000'	fourFrames = '1000010000100001 000'	
Time offset be (With respect t		us	0	3	2		
	ft between cells	Hz	0	300	-100		
Physical Cell II			PCI _{cell1}	(PCI _{cell1} - PCI _{cell2}) mod3 = 0,	(PCI _{cell1} - PCI _{cell3}) mod3!= 0	Cell PCIs are selected so that all conditions are met	

		1		DOI :	1	T	
				PCI _{cell1} not			
				equal to			
				PCI _{cell2}			
In sync transmis		DCI	1C	1C	1C		
parameters (No		format					
	Number of		3	3	3	As defined in section	
	Control					5.3.3.1.4 in TS 36.212	
In sync	OFDM						
transmission	symbols						
parameters	Aggregatio	CCE	4	4	4	In sync threshold Q _{in} and	
(Note 1)	n level					the corresponding	
	ρ _Α , ρ _Β		-3	-3	-3	hypothetical	
	Ratio of		-3	Non-ABS and	IABS	PDCCH/PCFICH	
	PDCCH to			subframe cha	nnel powers	transmission parameters	
	RS EPRE			defined in Tal	ole A.3.4.2.2-2.	are as specified in section	
	Ratio of		1			and Table 7.6.1-2	
	PCFICH to					respectively.	
	RS EPRE						
	DCI format		1A	1A	1A		
	Number of		3	3	3	As defined in section	
Out of sync	Control					5.3.3.1.3 in TS 36.212	
transmission	OFDM						
parameters	symbols						
(Note 1)	Aggregatio	CCE	8	8	8	Out of sync threshold Q _{out} and the corresponding	
	n level						
	ρα, ρв		-3	-3	-3	hypothetical	
	Ratio of	dB	1	Non-ABS and	IABS	PDCCH/PCFICH transmission parameters are as specified in section	
	PDCCH to			subframe cha	nnel powers		
	RS EPRE			defined in Tal	ole A.3.4.2.2-2.		
	Ratio of	dB	1			7.6.1 and Table 7.6.1-1	
	PCFICH to					respectively.	
	RS EPRE						
DRX			OFF	OFF	OFF		
Layer 3 filtering			Enabled	Disable	Disable	Counters:	
Layor o mioring			Liidolod	Dioabio	Dioabio	N310 = 1; N311 = 1	
T310 timer		ms	2000	N/A	1	T310 is enabled	
T311 timer		ms	1000	1 777		T311 is enabled	
Periodic CQI re	porting mode		PUCCH 1-0	†		As defined in table 7.2.2-1	
r enounce our reporting mode			1 2001110			in TS 36.213.	
CQI reporting periodicity		ms	2	†		Minimum CQI reporting	
			-			periodicity	
T1	T1		0.5	N/A			
T2		s	0.4				
T3		S	1.46				
T4		S	0.4	1			
T5		s	1	†			
			1 .	1		1	

Table A.7.3.21.1-2: Cell specific test parameters for E-UTRAN FDD in-sync radio link monitoring test

Parameter	Unit	Test 1						
		Cell1			Cell2	Cell3		
		T1	T2	T3	T4	T5	T1-T5	T1-T5
E-UTRA RF Channel				1			1	1
Number								
BW _{channel}	MHz			10			10	10
Correlation Matrix				2x2 Low			2x2 Low	2x2 Low
and Antenna								
Configuration								
PCFICH/PDCCH/PHI				R.9 FDD			R.9 FDD	R.9 FDD
CH parameters								
OCNG Pattern								
defined in A.3.2.1				OP.6 FDD)		OP.9 FDD	OP.9 FDD
(FDD)								_
ρα, ρΒ		-3				-3 -3		
PCFICH_RB	dB			1				ABS subframe
PDCCH_RA	dB							ers defined in
PDCCH_RB	dB						l able A.	3.4.2.2-2.
PBCH_RA	dB							
PBCH_RB	dB			•				
PSS_RA	dB			-3				
SSS_RA	dB							
PHICH_RA	dB							
PHICH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
SNR Note 6	dB	-1.5	-5.2	-13.7	-8.6	-1.5	4	2
N_{oc}	dBm/15			-98			-98	-98
1 oc	kHz							
Propagation condition	Hz			ETU 30			ETU 30	ETU 30

- Note 1: OCNG shall be used such that the resources in cell 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 5: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.
- Note 6: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and SNR5 respectively in figure A.7.3.21.1-1.

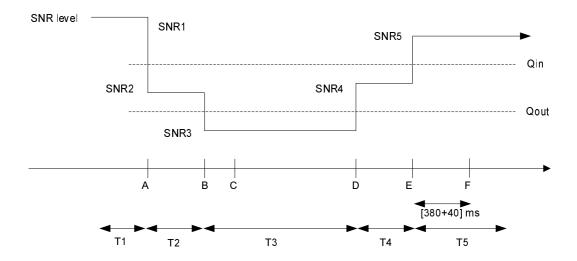


Figure A.7.3.21.1-1 SNR variation for in-sync testing

A.7.3.21.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.22 E-UTRAN TDD Radio Link Monitoring Test for In-sync under Time Domain Measurement Resouce Restriction with CRS assistance information and MBSFN ABS

A.7.3.22.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell under time domain measurement resource restriction with CRS assistance information. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.22.1-1 and A.7.3.22.1-2 below. There are three active cells in the test: Cell 1 is the PCell and Cell 2 and 3 are the Neighbor cells. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.22.1-1 shows the variation of the downlink SNR in the PCell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

MBSFN ABS pattern is configured in both Cell 2 and Cell 3 in this test. The UE is configured by higher layers with a time domain measurement restriction pattern for performing PCell measurements. The UE is also provided via higher layers with the CRS assistance information for Cell 2 and Cell 3, which shall be valid during T1, T2, T3, T4 and T5 in this test. The MBSFN ABS pattern, the time domain measurement resource restriction pattern and the CRS assistance information shall be configured prior to the start of T1.

Table A.7.3.22.1-1: General test parameters for E-UTRAN TDD in-sync radio link monitoring test

Para	meter	Unit	Value		Comment	
				Test 1		
PCFICH/PDCCH/PHICH parameters			R.9 TDD	R.9 TDD	R.9 TDD	As specified in section A.3.1.2.2.
parameters						None of the PDCCH are intended for the UE under test
OCNG parame	eters		OP.2 TDD	OP.6 TDD	OP.6 TDD	As specified in section A.3.2.2.
Active cell			PCell	Neighbor Cell	Neighbor Cell	Cell 1, Cell 2 and Cell 3 are on E-UTRA RF channel number 1
CP length			Normal	Normal	Normal	
	hannel Number		1	1	1	One E-UTRA TDD carrier frequency is used.
E-UTRA Chan (BW _{channel})	nel Bandwidth	MHz	10	10	10	
Correlation Ma Antenna Confi			2x2 Low	2x2 Low	2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2
Neighbor Cell configuration	ABS		N/A	MBSFN ABS		As defined in Table A.3.4.2.2-1
ABS Pattern			N/A	'000010000 0000010000 0'	'000010000 0000010000 0'	TDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2 and Cell 3 The first/leftmost bit corresponds to the subframe #0 of the radio frame satisfying SFN mod 20 = 0, where x is the size of the bit string (20) divided by 10. MBSFN subframes are configured in the ABS subframes.
Time domain r resource restri	ction pattern		'000010000 0000010000 0'	N/A	N/A	Time domain measurement resource restriction pattern for serving cell measurement signalled to the UE in message measSubframePatternPCe II-r10 as defined in TS 36.331, clause 6.3.2.
CRS assistance information	physCellId		N/A	see PCI conditions below	see PCI conditions below	The CRS assistance information is provided for Cell 2 and Cell 3 in CRS-
monnation	antennaPorts Count			an2	an2	AssistanceInfo. It includes a single MBSFN-
	mbsfn- SubframeCo			fourFrames	fourFrames	SubframeConfig element with subframe allocation
	nfigList			'010000100 0010000100 00000'	'010000100 0010000100 00000'	fourFrames = '010000100001000010000 000'
Time offset fro		us	0	3	2	
Frequency offs Physical Cell I		Hz	O PCI _{cell1}	$\begin{array}{c} 300 \\ (\text{PCI}_{\text{cell1}}\text{-}\\ \text{PCI}_{\text{cell2}}) \\ \text{mod3} = 0, \\ \text{PCI}_{\text{cell1}} \text{ not} \\ \text{equal to} \end{array}$	-100 (PCI _{cell1} - PCI _{cell3}) mod3 != 0	Cell PCIs are selected so that all conditions are met

				PCI _{cell2}			
	DCI format		1C	1C	1C	As defined in section 5.3.3.1.4 in TS 36.212	
In sync transmission parameters	Number of Control OFDM symbols		2	2 2		In sync threshold Q _{in} and the corresponding hypothetical PDCCH/PCFICH	
(Note 1)	Aggregatio n level	CCE	4	4	4	transmission parameters are as specified in section	
	ρ _A , ρ _B		-3	-3	-3	and Table 7.6.1-2	
	Ratio of PDCCH to RS EPRE		-3	Non-ABS and subframe cha defined in Tab		respectively.	
	Ratio of PCFICH to RS EPRE		1				
	DCI format		1A	1A	1A	As defined in section 5.3.3.1.3 in TS 36.212	
Out of sync transmission parameters (Note 1)	Number of Control OFDM symbols		2	2	2	Out of sync threshold Q _{out} and the corresponding hypothetical PDCCH/PCFICH	
	Aggregatio n level	CCE	8	8	8	transmission parameters are as specified in section	
	ρ _A , ρ _B		-3	-3	-3	7.6.1 and Table 7.6.1-1 respectively.	
	Ratio of PDCCH to RS EPRE	dB	1	Non-ABS and subframe cha defined in Tab			
	Ratio of PCFICH to RS EPRE	dB	1				
DRX			OFF	OFF	OFF		
Layer 3 filtering			Enabled	Disable	Disable	Counters: N310 = 1; N311 = 1	
T310 timer		ms	2000	N/A	•	T310 is enabled	
T311 timer		ms	1000			T311 is enabled	
Periodic CQI reporting mode			PUCCH 1-0			As defined in table 7.2.2-1 in TS 36.213.	
CQI reporting periodicity		ms	1			Minimum CQI reporting periodicity	
T1		S	0.5	N/A			
T2		S	0.4	_			
T3		S	1.46				
T4		s s	0.4				
T5	T5		1				

Table A.7.3.22.1-2: Cell specific test parameters for E-UTRAN TDD in-sync radio link monitoring test

Parameter	Unit	Test 1						
		Cell1			Cell2	Cell3		
		T1	T2	T3	T4	T5	T1-T5	T1-T5
E-UTRA RF Channel				1			1	1
Number								
BW _{channel}	MHz			10			10	10
Correlation Matrix				2x2 Low			2x2 Low	2x2 Low
and Antenna								
Configuration								
Special subframe				6			6	6
configuration Note 1								
Uplink-downlink				1			1	1
configuration Note 2								
PCFICH/PDCCH/PHI				R.9 TDD			R.9 TDD	R.9 TDD
CH parameters								
OCNG Pattern								
defined in A.3.2.2				OP.2 TDD)		OP.6 TDD	OP.6 TDD
(TDD)								
ρΑ, ρΒ				-3			-3	-3
PCFICH_RB	dB			11				ABS subframe
PDCCH_RA	dB							ers defined in
PDCCH_RB	dB						Table A.	3.4.2.2-1.
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB			-3				
SSS_RA	dB							
PHICH_RA	dB							
PHICH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 3}	dB							
OCNG RB ^{Note 3}	dB							
SNR Note 8	dB	-1.5	-5.2	-13.7	-8.6	-1.5	4	2
N_{oc}	dBm/15			-98	•		-98	-98
	kHz							
Propagation condition	Hz			ETU 30			ETU 30	ETU 30

Note 1: For the special subframe configuration see table 4.2-1 in 3GPP TS 36.211.

SNR4 and SNR5 respectively in figure A.7.3.22.1-1.

Note 2: For the uplink-downlink configuration see table 4.2-2 in 3GPP TS 36.211.

Note 3: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.

Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.

Note 6: The signal contains PDCCH for UEs other than the device under test as part of OCNG.

Note 7: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.

Note 8: The SNR in time periods T1, T2, T3, T4 and T5 of active cell is denoted as SNR1, SNR2, SNR3,

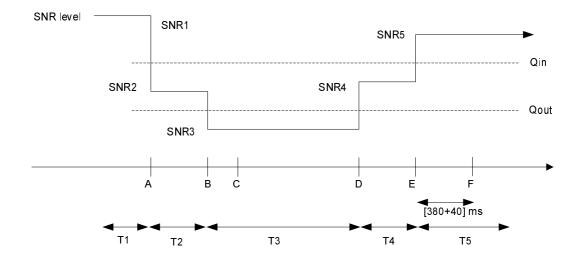


Figure A.7.3.22.1-1 SNR variation for in-sync testing

A.7.3.22.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.23 E-UTRAN FDD Radio Link Monitoring Test for Out-of-sync for 5MHz Bandwidth

A.7.3.23.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.7.3.1. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.7.3.23.1-1 and A.7.3.23.1-2 will replace the values of corresponding parameters in Test 4 in Tables A.7.3.1.1-1 and A.7.3.1.1-2. Only Test 4 is defined for the 5MHz bandwidth.

Table A.7.3.23.1-1: General test parameters for E-UTRAN FDD out-of-sync testing under 5MHz

Bandwidth

Par	Parameter		Value	Comment
			Test 4	
PCFICH/PDC parameters	CH/PHICH		R.12 FDD	As specified in clause A.3.1.2.1. None of the PDCCH are intended for the UE under test
OCNG parameters		OP.16 FDD		As specified in clause A.3.2.1.16.
E-UTRA Char (BW _{channel})	nnel Bandwidth	MHz	5	
Out of sync transmission parameters (Note 1)	Number of Control OFDM Symbols		3	Out of sync threshold Q _{out} and the corresponding hypothetical PDCCH/PCFICH transmission parameters are as specified in clause 7.6.1 and Table 7.6.1-1 respectively.

Note 1: PDCCH/PCFICH corresponding to the out of sync transmission parameters need not be included in the Reference Measurement Channel.

Note 2: See Table A.7.3.1.1-1 for other general test parameters.

Note 3: This test is according to the principle defined in section A.3.7.2.

Table A.7.3.23.1-2: Cell specific test parameters for E-UTRAN FDD for out-of-sync radio link monitoring test #4 under 5MHz Bandwidth

Parameter	Unit	Test 4				
		T1	T2	T3		
BW _{channel}	MHz	5				
OCNG Pattern						
defined in A.3.2.1.16		OP.16 FDD				
(FDD)						
SNR Note 6	dB	-2.3	-5.7	-12.2		
Note 1: See Table A.7.3.1.1-2 for other cell specific test						
parameters.						

A.7.3.23.2 Test Requirements

The requirements defined in section A.7.3.1.2 shall apply to this test case.

A.7.3.24 E-UTRAN FDD Radio Link Monitoring Test for In-sync for 5MHz Bandwidth

A.7.3.24.1 Test Purpose and Environment

The purpose of this test case is the same as for the Test 2 defined in subclause A.7.3.2. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.7.3.24.1-1 and A.7.3.24.1-2 will replace the values of corresponding parameters in Tables A.7.3.2.1-1 and A.7.3.2.1-2.

Table A.7.3.24.1-1: General test parameters for E-UTRAN FDD in-sync testing

Par	ameter	Unit	Value	Comment
PCFICH/PDCCH/PHICH parameters			R.12 FDD	As specified in clause A.3.1.2.1. None of the PDCCH are intended for the UE under test
E-UTRA Chani (BW _{channel})	nel Bandwidth	MHz	5	
In sync transmission parameters (Note 1)	transmission Control OFDM symbols		3	In sync threshold Q _{in} and the corresponding hypothetical PDCCH/PCFICH transmission parameters are as specified in clause and Table 7.6.1-2 respectively.
Out of sync transmission parameters (Note 1) Number of Control OFDM symbols Out of sync threshold Qout and the corresponding hypothetical PDCCH/PCFICH transmission parameters are as specified in clause 7.6.1 and Table 7.6.1-1 respectively.				
			general test parameters. g to the principle defined in	section A.3.7.2

Table A.7.3.24.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for in-sync radio link monitoring test

Parameter	Unit	T1	T2	T3	T4	T5		
BW _{channel}	MHz	5						
OCNG Pattern								
defined in A.3.2.1.16			OP.16 FDD					
(FDD)								
SNR	dB	-2.3	-5.7	-12.2	-7.3	-2.3		
Propagation condition		ETU 70 Hz						
Note 1: See Table A.7.3.2.1-2 for other general test parameters.								

A.7.3.24.2 Test Requirements

The requirements defined in section A.7.3.2.2 shall apply to this test case.

A.7.3.25 E-UTRAN FDD Radio Link Monitoring Test for In-sync in DRX for 5MHz Bandwidth

A.7.3.25.1 Test Purpose and Environment

The purpose of this test case is the same as for the Test 2 defined in subclause A.7.3.6. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.7.3.25.1-1 and A.7.3.25.1-2 will replace the values of corresponding parameters in Tables A.7.3.6.1-1 and A.7.3.6.1-2.

Table A.7.3.25.1-1: General test parameters for E-UTRAN FDD in-sync testing

Parameter		Unit	Value	Comment
PCFICH/PDCCH/PHICH parameters			R.12 FDD	As specified in clause A.3.1.2.1. None of the PDCCH are intended for the UE under test
E-UTRA Cha (BW _{channel})	nnel Bandwidth	MHz	5	
In sync transmissio n parameters (Note 1)	Number of Control OFDM symbols		3	In sync threshold Qin and the corresponding hypothetical PDCCH/PCFICH transmission parameters are as specified in clause and Table 7.6.1-2 respectively.
Out of sync transmissio n parameters (Note 1)	Number of Control OFDM symbols		3	Out of sync threshold Qout and the corresponding hypothetical PDCCH/PCFICH transmission parameters are as specified in clause 7.6.1 and Table 7.6.1-1 respectively.

Note 2: This test is performed according to the principle defined in section A.3.7.2

Table A.7.3.25.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for in-sync radio link monitoring test

Parameter	Unit	T1	T2	T3	T4	T5	
BW _{channel}	MHz	5					
OCNG Pattern defined in A.3.2.1.16 (FDD)		OP.16 FDD					
SNR	dB	-2.3	-5.7	-12.2	-7.3	-2.3	
Propagation condition		AWGN					
Note 1: See Table A.7.3.6.1-2 for other general test parameters.							

A.7.3.25.2 Test Requirements

The requirements defined in section A.7.3.6.2 shall apply to this test case.

A.7.3.26 E-UTRAN FD-FDD Radio Link Monitoring Test for Out-of-sync for UE Category 0

A.7.3.26.1 Test Purpose and Environment

The purpose of this test is to verify that the FD-FDD category 0 UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in clause 7.11.

The test parameters are given in Tables A.7.3.26.1-1, A.7.3.26.1-2 and A.7.3.26.1-3 below. There is one cell (cell 1), which is the active cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.26.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

Table A.7.3.26.1-1: General test parameters for E-UTRAN FD-FDD out-of-sync testing for UE Category 0

Parameter		Unit	Value	Comment
Active cell			Cell 1	Cell 1 is on E-UTRA RF channel number 1
E-UTRA RF C		1	One E-UTRA FDD carrier frequency is used.	
E-UTRA Chan (BW _{channel})	nel Bandwidth	MHz	10	
CP length			Normal	
Out of sync	DCI format		1A	As defined in section 5.3.3.1.3 in TS 36.212
transmission parameters (Note 1)	Number of Control OFDM symbols		2	Out of sync threshold Qout and the corresponding
	Aggregation level	CCE	8	hypothetical PDCCH/PCFICH
	ρ_A , ρ_B		-3	transmission
	Ratio of PDCCH to RS EPRE	dB	4	parameters are as specified in section
	Ratio of PCFICH to RS EPRE	dB	1	7.11.1 and Table 7.11.1-1 respectively.
DRX			OFF	
Layer 3 filtering			Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	0	T310 is disabled
T311 timer		ms	1000	T311 is enabled
Periodic CQI reporting mode			PUCCH 1- 0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity		ms	2	Minimum CQI reporting periodicity
T1		S	1	
T2	S	0.4		
T3	S	0.5		

Table A.7.3.26.1-2: Cell specific test parameters for E-UTRAN FD-FDD (cell # 1) for out-of-sync radio link monitoring tests for UE Category 0

Parameter	Unit	Test 1				
		T1	T2	Т3		
E-UTRA RF Channel			1			
Number						
BW _{channel}	MHz		10			
PCFICH/PDCCH/PHIC			R.7 FDD			
H parameters defined						
in A.3.1.2.1						
OCNG Pattern defined		OP.2 FDD				
in A.3.2.1 (FDD)						
ρ _A , ρ _B		-3				
PCFICH_RB	dB		1			
PDCCH_RA	dB		4			
PDCCH_RB	dB		4			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB		0			
PHICH_RA	dB	-3				
PHICH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RANote 1	dB					
OCNG_RB ^{Note 1}	dB					
N_{oc}	dBm/15		-98			
	kHz		1			
SNR Note 6	dB	-2.1	-6.9	-12.9		
Propagation condition			ETU 70Hz			
Correlation Matrix and			2x1 Low			
Antenna Configuration	l			11.0.4		
Note 1: OCNG shall be						
are fully alloca						
spectral densit						
Note 2: The uplink res				nea to		
Note 3: The timers and				re are		
				is ait		
	configured prior to the start of time period T1. The signal contains PDCCH for UEs other than the					
	device under test as part of OCNG.					
Note 5: SNR levels correspond to the signal to noise ratio over						
	the cell-specific reference signal REs.					
Note 6: The SNR in time periods T1, T2 and T3 is denoted as						
SNR1, SNR2 and SNR3 respectively in figure						
A.7.3.26.1-1.		. ,	Ü			

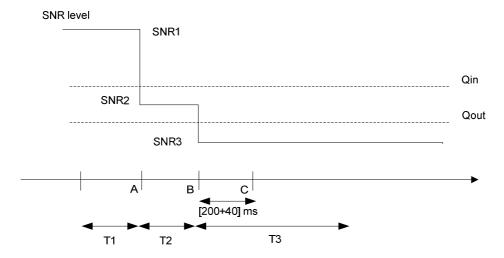


Figure A.7.3.26.1-1: SNR variation for out-of-sync testing

A.7.3.26.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (240 ms after the start of time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.27 E-UTRAN FD-FDD Radio Link Monitoring Test for In-sync for UE Category 0

A.7.3.27.1 Test Purpose and Environment

The purpose of this test is to verify that the FD-FDD category 0 UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell. This test will partly verify the E-UTRAN FD-FDD radio link monitoring requirements in clause 7.11.

The test parameters are given in Tables A.7.3.27.1-1 and A.7.3.27.1-2 below. There is one cell (cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.27.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms.

Table A.7.3.27.1-1: General test parameters for E-UTRAN FD-FDD in-sync testing for UE Category 0

Parameter		Unit	Value	Comment
Active cell			Cell 1	Cell 1 is on E-UTRA RF
	Channal Number		1	channel number 1 One E-UTRA FDD carrier
E-UTRA RF Channel Number			ļ	frequency is used.
E-UTRA Cha	nnel Bandwidth	MHz	10	noducitoy to docu.
(BW _{channel})				
CP length	I = 4.4		Normal	
In sync	DCI format		1C	As defined in clause 5.3.3.1.4 in TS 36.212
transmissio n parameters	Number of Control OFDM symbols		2	In sync threshold Q _{in} and the corresponding hypothetical
(Note 1)	Aggregation level	CCE	4	PDCCH/PCFICH transmission parameters
	ρΑ, ρΒ		-3	are as specified in clause
	Ratio of PDCCH to RS EPRE	dB	1	7.11.1 and Table 7.11.1-2 respectively.
	Ratio of PCFICH to RS EPRE	dB	1	
Out of sync	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212
transmissio n parameters	Number of Control OFDM symbols		2	Out of sync threshold Q _{out} and the corresponding hypothetical
(Note 1)	Aggregation level	CCE	8	PDCCH/PCFICH transmission parameters
	ρ _A , ρ _B		-3	are as specified in
	Ratio of PDCCH to RS EPRE	dB	4	clause 7.11.1 and Table 7.11.1-1 respectively.
	Ratio of PCFICH to RS EPRE	dB	1	
DRX			OFF	
Layer 3 filteri	ng		Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	2000	T310 is enabled
T311 timer		ms	1000	T311 is enabled
Periodic CQI reporting mode			PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity		ms	2	Minimum CQI reporting periodicity
T1		S	0.5	
T2		S	0.4	
T3		S	1.46	
T4		S	0.4	
T5	OCCU/DOFICIL com	S	1	out of sync transmission

Table A.7.3.27.1-2: Cell specific test parameters for E-UTRAN FD-FDD (cell # 1) for in-sync radio link monitoring test for UE Category 0

Parameter	Unit	Test 1						
		T1 T2 T3 T4 T5				T5		
E-UTRA RF Channel		1						
Number								
BW _{channel}	MHz	10						
PCFICH/PDCCH/PHICH				R.7 FDD	1			
parameters defined in								
clause A.3.1.2.1								
OCNG Pattern defined in				OP.2 FDI)			
A.3.2.1 (FDD)								
ρΑ, ρΒ				-3				
PCFICH_RB	dB			1				
PDCCH_RA	dB			1				
PDCCH_RB	dB	1						
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB			_				
PHICH_RA	dB			-3				
PHICH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB	7						
N_{oc}	dBm/15 kHz			-98				
SNR Note 6	dB	-2.1	-6.9	-12.9	-7.1	-2.1		
Propagation condition		ETU 70Hz						
Correlation Matrix and Antenna Configuration		2x1 Low						

- Note 1: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 5: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.
- Note 6: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and SNR5 respectively in figure A.7.3.27.1-1.

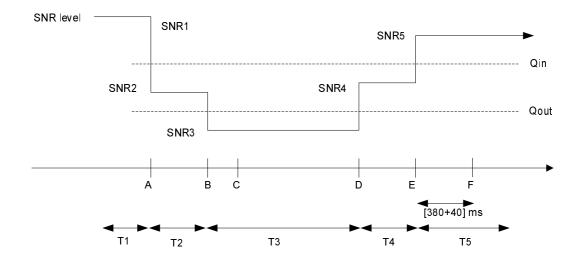


Figure A.7.3.27.1-1: SNR variation for in-sync testing

A.7.3.27.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.28 E-UTRAN FD-FDD Radio Link Monitoring Test for Out-of-sync in DRX for UE category 0

A.7.3.28.1 Test Purpose and Environment

The purpose of this test is to verify that the FD-FDD category 0 UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell when DRX is used. This test will partly verify the E-UTRAN FD-FDD radio link monitoring requirements in clause 7.11.

The test parameters are given in Tables A.7.3.28.1-1, A.7.3.28.1-2, A.7.3.28.1-3 and A.7.3.28.1-4. There is one cell (cell 1), which is the active cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.28.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Table A.7.3.28.1-1: General test parameters for E-UTRAN FD-FDD out-of-sync tests in DRX for UE category 0

Para	ameter	Unit	Value	Comment
Active cell			Cell 1	Cell 1 is on E-UTRA RF
				channel number 1
E-UTRA RF C	hannel Number		1	One E-UTRA FDD
				carrier frequency is
				used.
	nnel Bandwidth	MHz	10	
(BWchannel)			No was al	
CP length	DOI 4		Normal	A - define ed in
	DCI format		1A	As defined in clause 5.3.3.1.3 in TS
Out of sync				36.212
transmission	Number of		2	Out of sync threshold
parameters	Control OFDM			Qout and the
(Note 1)	symbols			corresponding
	Aggregation	CCE	8	hypothetical
	level			PDCCH/PCFICH
	ρΑ, ρΒ		-3	transmission parameters
	Ratio of	dB	4	are as specified in clause 7.11.1 and Table
	PDCCH to RS EPRE			7.11.1-1 respectively.
	Ratio of	dB	1	7.11.1 Prospectively.
	PCFICH to RS	uБ	'	
	EPRE			
DRX cycle		ms	1280	See Table A.7.3.28.1-3
Layer 3 filterin	ıg		Enabled	Counters:
				N310 = 1; N311 = 1
T310 timer		ms	0	T310 is disabled
	T311 timer		1000	T311 is enabled
Periodic CQI reporting mode			PUCCH 1-	As defined in table 7.2.2-
			0	1 in TS 36.213.
CQI reporting periodicity		ms	2	Minimum CQI reporting
T4			20	periodicity
T1 T2		S	32 12.8	
T3		S S	12.8	
13		১	10	

Table A.7.3.28.1-2: Cell specific test parameters for E-UTRAN FD-FDD (cell # 1) for out-of-sync radio link monitoring tests in DRX for UE category 0

Parameter	Unit		Test 1	
		T1	T2	Т3
E-UTRA RF Channel			1	
Number				
BW _{channel}	MHz		10	
PCFICH/PDCCH/PHICH			R.7 FDD	
parameters defined in				
clause A.3.1.2.1				
OCNG Pattern defined in			OP.2 FDD	
A.3.2.1 (FDD)				
ρ _A , ρ _B			-3	
PCFICH_RB	dB		1	
PDCCH_RA	dB		4	
PDCCH_RB	dB		4	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB		•	
PHICH_RA	dB		-3	
PHICH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note1}	dB			
OCNG_RB ^{Note1}	dB			
N_{oc}	dBm/15		-98	
SNR Note 6	kHz	0.4	40.0	440
	dB	-6.1	-10.0 AWGN	-14.0
Propagation condition				
Correlation Matrix and			2x1	
Antenna Configuration				11 11 4
Note 1: OCNG shall be				
are fully allocate				
spectral density Note 2: The uplink resou				
the UE prior to the			, ,	neu to
Note 3: The timers and I				re ara
configured prior				is alt
Note 4: The signal conta				he
device under tes				-
Note 5: SNR levels corre			noise rati	o over
the cell-specific				-
Note 6: The SNR in time p	periods T1,	T2 and T3	is denoted	
SNR1, SNR2 and SNR3 re	spectively	in figure A.	7.3.28.1-1.	

Table A.7.3.28.1-3: DRX-Configuration for E-UTRAN FD-FDD out-of-sync tests for UE category 0

Field	Value	Comment
onDurationTimer	psf2	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table A.7.3.28.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN FD-FDD out-of-sync testing for UE category 0

Field	Value	Comment
TimeAlignmentTimer	infinity	As specified in clause 6.3.2 in TS
TimeAlignmentTimer	minity	36.331
		For further information see
sr-ConfigIndex	0	clause 6.3.2 in TS 36.331 and
		section10.1 in TS 36.213.

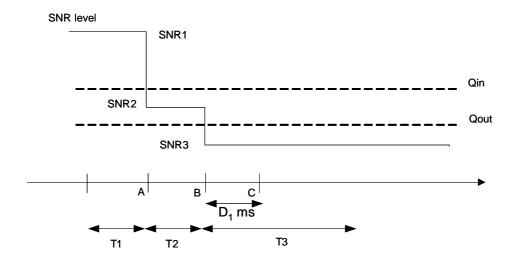


Figure A.7.3.28.1-1: SNR variation for out-of-sync testing in DRX

A.7.3.28.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the subframe according to the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (duration $D_1 = 6500$ ms after the start of time duration T3.

The rate of correct events observed during repeated tests shall be at least 90%.

7.3.29 E-UTRAN FD-FDD Radio Link Monitoring Test for In-sync in DRX for UE Category 0

7.3.29.1 Test Purpose and Environment

The purpose of this test is to verify that the FD-FDD category 0 UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell when DRX is used. This test will partly verify the E-UTRAN FD-FDD radio link monitoring requirements in clause 7.11.

The test parameters are given in Tables 7.3.29.1-1, 7.3.29.1-2, 7.3.29.1-3 and 7.3.29.1-4. There is one cell (cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure 7.3.29.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Table 7.3.29.1-1: General test parameters for E-UTRAN FD-FDD in-sync test in DRX for UE category 0

Parameter		Unit	Value	Comment
Active cell			Cell 1	Cell 1 is on E-UTRA RF
E LITOA DE C	hannel Number		1	channel number 1 One E-UTRA FDD carrier
E-UTRA RE C	nannei Number		1	
E LIEDA Ob	and Described data	MHz	10	frequency is used.
	E-UTRA Channel Bandwidth		10	
(BW _{channel})	CP length		Normal	
CP length	DOI (As defined in alcose 5.0.04.4
	DCI format		1C	As defined in clause 5.3.3.1.4 in TS 36.212
In sync	Number of Control		2	In sync threshold Q _{in} and the
transmission	OFDM symbols			corresponding hypothetical
parameters	Aggregation level	CCE	4	PDCCH/PCFĬCH
(Note 1)	ρ _A , ρ _B		-3	transmission parameters are
	Ratio of PDCCH to RS EPRE		1	as specified in clause 7.11.1 and Table 7.11.1-2
	Ratio of PCFICH to RS EPRE		1	respectively.
	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212
Out of sync	Number of Control		2	Out of sync threshold Qout
transmission	OFDM symbols			and the corresponding
parameters	Aggregation level	CCE	8	hypothetical PDCCH/PCFICH
(Note 1)	ρ _A , ρ _B		-3	transmission parameters are
	Ratio of PDCCH to RS EPRE	dB	4	as specified in clause 7.11.1 and Table 7.11.1-1
	Ratio of PCFICH to RS EPRE	dB	1	respectively.
DRX cycle		ms	40	See Table 7.3.29.1-3
Layer 3 filterin	g		Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	2000	T310 is enabled
T311 timer		ms	1000	T311 is enabled
Periodic CQI reporting mode			PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity		ms	2	Minimum CQI reporting periodicity
T1		S	4	•
T2		S	1.6	
T3		S	1.46	
T4		S	0.4	
T5		S	4	
	CCH/DCEICH correspon			

Table 7.3.29.1-2: Cell specific test parameters for E-UTRAN FD-FDD (cell # 1) for in-sync radio link monitoring test in DRX for UE category 0

Parameter	Unit			Test 1		
		T1	T2	T3	T4	T5
E-UTRA RF Channel Number				1		
BW _{channel}	MHz			10		
PCFICH/PDCCH/PHICH				R.7 FDD		
parameters defined in						
clause A.3.1.2.1						
OCNG Pattern defined in						
A.3.2.1 (FDD)				OP.2 FDD		
ρ_{A}, ρ_{B}				-3		
PCFICH_RB	dB			1		
PDCCH_RA	dB			11		
PDCCH_RB	dB			11		
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB			_		
PHICH_RA	dB			-3		
PHICH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note1}	dB					
OCNG_RB ^{Note1}	dB					
N_{oc}	dBm/15			-98		
	kHz		T	T	1	
SNR Note 8	dB	-6.1	-10.0	-14.0	-10.1	-6.1
Propagation condition				AWGN		
Correlation Matrix and				2x1		
Antenna Configuration						
Note 1: OCNG shall be used					and a con	stant total
transmitted power sp						
Note 2: The uplink resources						
Note 3: The timers and layer	: 3 filtering rela	ated paramete	ers are config	ured prior to	the start of	time period

- Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 5: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.
- Note 6: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and
 - SNR5 respectively in figure 7.3.29.1-1.

Table 7.3.29.1-3: DRX-Configuration for E-UTRAN FD-FDD out-of-sync tests for UE category 0

Field	Value	Comment
onDurationTimer	psf2	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf40	
shortDRX	disable	

Table 7.3.29.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN FD-FDD out-of-sync testing for UE category 0

Field	Value	Comment
TimeAlignmentTimer	infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

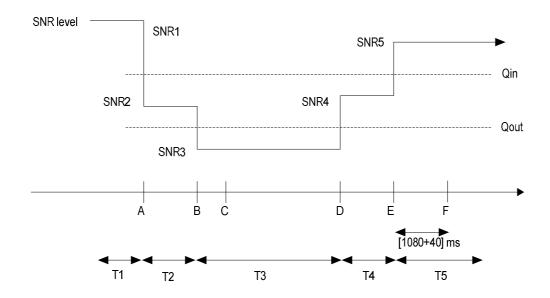


Figure 7.3.29.1-1: SNR variation for in-sync testing in DRX

7.3.29.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (1120 ms after the start of time duration T5) the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the subframe according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.30 E-UTRAN HD-FDD Radio Link Monitoring Test for Out-of-sync for UE Category 0

A.7.3.30.1 Test Purpose and Environment

The purpose of this test is to verify that the HD-FDD category 0 UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell. This test will partly verify the E-UTRAN HD-FDD radio link monitoring requirements in clause 7.11.

The test parameters are given in Tables A.7.3.30.1-1, A.7.3.30.1-2 and A.7.3.30.1-3 below. There is one cell (cell 1), which is the active cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.30.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of [TBD] ms.

Table A.7.3.30.1-1: General test parameters for E-UTRAN HD-FDD out-of-sync testing for UE Category 0

Pa	Parameter		Value	Comment
Active cell			Cell 1	Cell 1 is on E-UTRA
				RF channel number 1
E-UTRA RF C	hannel Number		1	One E-UTRA FDD
				carrier frequency is
				used.
	nel Bandwidth	MHz	10	
(BW _{channel})				
CP length			Normal	
	DCI format		1A	As defined in section
0				5.3.3.1.3 in TS
Out of sync	November of		0	36.212
transmission parameters	Number of Control OFDM		2	Out of sync threshold
(Note 1)				Q _{out} and the corresponding
(Note 1)	symbols Aggregation level	CCE	8	hypothetical
		CCL	-3	PDCCH/PCFICH
	ρ _A , ρ _B Ratio of PDCCH	dB	4	transmission
	to RS EPRE	uБ	4	parameters are as
	Ratio of PCFICH	dB	1	specified in section
	to RS EPRE	GD	'	7.11.1 and Table
	to NO EL NE			7.11.1-1 respectively.
DRX			OFF	
Layer 3 filterin	g		Enabled	Counters:
				N310 = 1; N311 = 1
T310 timer		ms	0	T310 is disabled
T311 timer		ms	1000	T311 is enabled
Periodic CQI reporting mode			PUCCH 1-0	As defined in table
				7.2.2-1 in TS 36.213.
CQI reporting periodicity		ms	[TBD]	Minimum CQI
		-		reporting periodicity
T1		S	1	
T2		S	0.4	
T3	0011/0051011	S	0.5	
Note 1: PD	CCH/PCFICH corres	ponding	to the out of syr	nc transmission

Table A.7.3.30.1-2: Cell specific test parameters for E-UTRAN HD-FDD (cell # 1) for out-of-sync radio link monitoring for UE Category 0

Parameter	Unit		Test 1		
		T1	T2	Т3	
E-UTRA RF Channel			1		
Number					
BW _{channel}	MHz		10		
PCFICH/PDCCH/PHIC		F	R.4 HD-FDI)	
H parameters defined					
in section A.3.1.2.3					
OCNG Pattern defined					
in A.3.2.1 (FDD)			OP.2 FDD		
ρ _A , ρ _B			-3		
PCFICH_RB	dB		1		
PDCCH_RA	dB		4		
PDCCH_RB	dB		4		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PHICH_RA	dB	-3			
PHICH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB	1			
OCNG_RB ^{Note 1}	dB				
N_{oc}	dBm/15		-98		
	kHz				
SNR Note 6	dB	-1.2	-6.0	-12.0	
Propagation condition			ETU 70Hz		
Correlation Matrix and			2x1 Low		
Antenna Configuration					
Note 1: OCNG shall be	e used such	that the res	sources in o	cell # 1	
are fully alloca	ited and a co	nstant tota	l transmitte	d power	
spectral densi	ty is achieved	d for all OF	DM symbo	ls.	
Note 2: The uplink res	ources for Co	QI reporting	g are assig	ned to	
the UE prior to					
Note 3: The timers and				rs are	
configured price					
Note 4: The signal cor			other than t	he	
device under t					
Note 5: SNR levels co				o over	
the cell-specifi					
Note 6: The SNR in tir					

SNR1, SNR2 and SNR3 respectively in figure A.7.3.30.1-

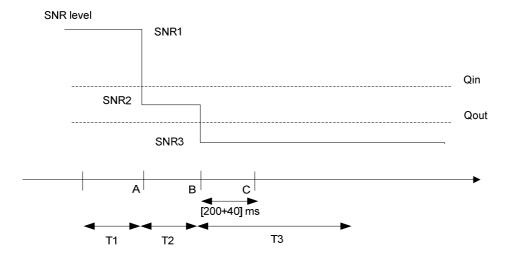


Figure A.7.3.30.1-1: SNR variation for out-of-sync testing

A.7.3.30.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (240 ms after the start of time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.31 E-UTRAN HD-FDD Radio Link Monitoring Test for In-sync for UE Category 0

A.7.3.31.1 Test Purpose and Environment

The purpose of this test is to verify that the HD-FDD category 0 UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell. This test will partly verify the E-UTRAN HD-FDD radio link monitoring requirements in clause 7.11.

The test parameters are given in Tables A.7.3.31.1-1 and A.7.3.31.1-2 below. There is one cell (cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.31.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of [TBD] ms.

Table A.7.3.31.1-1: General test parameters for E-UTRAN HD-FDD in-sync testing

Pa	arameter	Unit	Value	Comment
Active cell			Cell 1	Cell 1 is on E-UTRA RF channel number 1
E-UTRA RF (E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
(BW _{channel})	E-UTRA Channel Bandwidth (BW _{channel})		10	
CP length			Normal	
	DCI format		1C	As defined in clause 5.3.3.1.4 in TS 36.212
In sync transmissio	Number of Control OFDM symbols		2	In sync threshold Q _{in} and the corresponding hypothetical
n	Aggregation level	CCE	4	PDCCH/PCFICH transmission
parameters	ρα, ρв		-3	parameters are as specified in
(Note 1)	Ratio of PDCCH to RS EPRE	dB	1	clause 7.11.1 and Table 7.11.1-2 respectively.
	Ratio of PCFICH to RS EPRE	dB	1	
	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212
Out of sync transmissio	Number of Control OFDM symbols		2	Out of sync threshold Q _{out} and the corresponding
n	Aggregation level	CCE	8	hypothetical PDCCH/PCFICH
parameters	ρΑ, ρΒ		-3	transmission parameters are
(Note 1)	Ratio of PDCCH to RS EPRE	dB	4	as specified in clause 7.11.1 and Table 7.11.1-1
	Ratio of PCFICH to RS EPRE	dB	1	respectively.
DRX			OFF	
Layer 3 filteri	ng		Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	2000	T310 is enabled
T311 timer		ms	1000	T311 is enabled
Periodic CQI	Periodic CQI reporting mode		PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity		ms	[TBD]	Minimum CQI reporting periodicity
T1		S	0.5	
T2		S	0.4	
T3		S	1.46	
T4 T5		S S	0.4	

Table A.7.3.31.1-2: Cell specific test parameters for E-UTRAN HD-FDD (cell # 1) for in-sync radio link monitoring test for UE category 0

Parameter	Unit			Test 1		
		T1	T2	T3	T4	T5
E-UTRA RF Channel Number				1		
BW _{channel} MHz				10		
PCFICH/PDCCH/PHICH				R.4 HD-FD	D	
parameters defined in						
clause A.3.1.2.3						
OCNG Pattern defined in						
A.3.2.1 (FDD)				OP.2 FDD	1	
ρ_{A},ρ_{B}				-3		
PCFICH_RB	dB	1			<u> </u>	
PDCCH_RA	dB	1				
PDCCH_RB	dB	1				
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PHICH_RA	dB			-3		
PHICH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
N_{oc}	dBm/15		·	-98		
	kHz					
SNR Note 6	dB	-1.2	-6.0	-12.0	-6.2	-1.2
Propagation condition		ETU 70Hz				
Correlation Matrix and				2x1 low		
Antenna Configuration						

- Note 1: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 5: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.
- Note 6: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and SNR5 respectively in figure A.7.3.31.1-1.

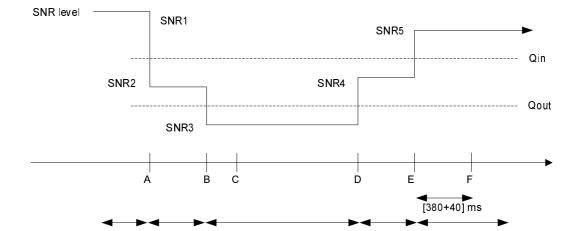


Figure A.7.3.31.1-1: SNR variation for in-sync testing

A.7.3.31.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.32 E-UTRAN HD-FDD Radio Link Monitoring Test for Out-of-sync in DRX for UE category 0

A.7.3.32.1 Test Purpose and Environment

The purpose of this test is to verify that the HD-FDD category 0 UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell when DRX is used. This test will partly verify the E-UTRAN HD-FDD radio link monitoring requirements in clause 7.11.

The test parameters are given in Tables A.7.3.32.1-1, A.7.3.32.1-2, A.7.3.32.1-3 and A.7.3.32.1-4. There is one cell (cell 1), which is the active cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.32.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 5ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Table A.7.3.32.1-1: General test parameters for E-UTRAN HD-FDD out-of-sync tests in DRX for UE category 0

		Cell 1	O-II 4 is an ELITOA DE
		Cell I	Cell 1 is on E-UTRA RF
E-UTRA RF Channel Number			channel number 1
nel Number		1	One E-UTRA FDD carrier
			frequency is used.
Bandwidth	MHz	10	
		Normal	
CI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212
		2	Out of sync threshold Qout
			and the corresponding
gregation level	CCE		hypothetical PDCCH/PCFICH
'		_	transmission parameters are
	dB	4	as specified in clause 7.11.1
			and Table 7.11.1-1
	dB	1	respectively.
SEPRE			
	ms		See Table A.7.3.32.1-3
		Enabled	Counters:
			N310 = 1; N311 = 1
	ms	•	T310 is disabled
	ms		T311 is enabled
rting mode		PUCCH 1-0	As defined in table 7.2.2-1 in
			TS 36.213.
odicity	ms	5	Minimum CQI reporting
T1			periodicity
		<u> </u>	
	S		
	_		
	Bandwidth CI format Imber of Control FDM symbols Igregation level Igregation of PDCCH to SEPRE Intio of PCFICH to SEPRE Inting mode Indicity	CI format Imber of Control FDM symbols Iggregation level CCE In, pB Intio of PDCCH to BEPRE Intio of PCFICH to BEPRE Int	Normal 1A

Table A.7.3.32.1-2: Cell specific test parameters for E-UTRAN HD-FDD (cell # 1) for out-of-sync radio link monitoring tests in DRX for UE category 0

Parameter	Unit	Test 1				
		T1	T2	T3		
E-UTRA RF Channel			1			
Number						
BW _{channel}	MHz		10			
PCFICH/PDCCH/PHICH		F	R.4 HD-FDI	D		
parameters specified in						
clause A.3.1.2.3						
OCNG Pattern defined in			OP.2 FDD			
A.3.2.1 (FDD)						
ρα, ρΒ	-ID		-3			
PCFICH_RB	dB		11			
PDCCH_RA	dB dB		<u>4</u> 4			
PDCCH_RB PBCH_RA	dB dB		4			
PBCH_RA	dB dB					
PSS_RA	dB					
SSS RA	dB					
PHICH_RA	dB					
PHICH_RB	dB					
PDSCH_RA	dB					
PDSCH RB	dB					
OCNG_RA ^{Note1}	dB	_				
OCNG_RB ^{Note1}	dB					
N_{oc}	dBm/15		-98			
	kHz					
SNR Note 6	dB	-5.4	-9.5	-13.5		
Propagation condition			AWGN			
Correlation Matrix and			2x1			
Antenna Configuration				11.11.4		
Note 1: OCNG shall be						
are fully allocate spectral density						
Note 2: The uplink resou						
the UE prior to t				neu to		
Note 3: The timers and				rs are		
configured prior						
Note 4: The signal conta	·					
device under tes	device under test as part of OCNG.					
	correspond to the signal to noise ratio over					
the cell-specific				_		
Note 6: The SNR in time						
SNR1, SNR2 ar	na SNR3 re	spectively	in figure A.	7.3.32.1-		
1.						

Table A.7.3.32.1-3: DRX-Configuration for E-UTRAN HD-FDD out-of-sync test for UE category 0

Field	Value	Comment
onDurationTimer	psf5	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table A.7.3.32.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN HD-FDD out-of-sync testing for UE category 0

Field	Value	Comment
TimeAlignmentTimer	infinity	As specified in clause 6.3.2 in TS
TimeAlignmentTimer	minity	36.331
		For further information see
sr-ConfigIndex	0	clause 6.3.2 in TS 36.331 and
		section10.1 in TS 36.213.

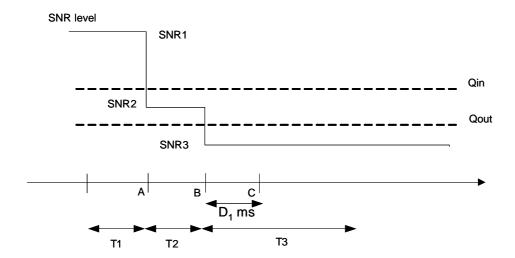


Figure A.7.3.32.1-1: SNR variation for out-of-sync testing in DRX

A.7.3.32.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the subframe according to the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (duration $D_1 = 6500$ ms after the start of time duration T3.

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.33 E-UTRAN HD-FDD Radio Link Monitoring Test for In-sync in DRX for UE Category 0

A.7.3.33.1 Test Purpose and Environment

The purpose of this test is to verify that the HD-FDD category 0 UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell when DRX is used. This test will partly verify the E-UTRAN HD-FDD radio link monitoring requirements in clause 7.11.

The test parameters are given in Tables A.7.3.33.1-1, A.7.3.33.1-2, A.7.3.33.1-3 and A.7.3.33.1-4. There is one cell (cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.33.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 5 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Table A.7.3.33.1-1: General test parameters for E-UTRAN HD-FDD in-sync test in DRX for UE category

Pa	rameter	Unit	Value	Comment		
Active cell			Cell 1	Cell 1 is on E-UTRA RF		
E-UTRA RF C	hannel Number		1	channel number 1 One E-UTRA FDD carrier frequency is used.		
	E-UTRA Channel Bandwidth (BW _{channel})		10	noquonoy io uoou.		
CP length			Normal			
J	DCI format	1C As defin		As defined in clause 5.3.3.1.4 in TS 36.212		
In sync transmission	Number of Control OFDM symbols		2	In sync threshold Q _{in} and the corresponding hypothetical		
parameters (Note 1)	Aggregation level	CCE	4	PDCCH/PCFICH transmission parameters are as specified in		
	ρα, ρв		-3	clause7.11.1 and Table 7.11.1- 2 respectively.		
	Ratio of PDCCH to RS EPRE	dB	1			
	Ratio of PCFICH to RS EPRE	dB	1			
	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212		
Out of sync transmission	Number of Control OFDM symbols		2	Out of sync threshold Q _{out} and the corresponding hypothetical		
parameters (Note 1)	Aggregation level	CCE	8	PDCCH/PCFICH transmission parameters are as specified in		
	ρα, ρв		-3	clause 7.11.1 and Table 7.11.1- 1 respectively.		
	Ratio of PDCCH to RS EPRE	dB	4			
	Ratio of PCFICH to RS EPRE	dB	1			
DRX cycle		ms	40	See Table A.7.3.33.1-3		
Layer 3 filtering	g		Enabled	Counters: N310 = 1; N311 = 1		
T310 timer		ms	2000	T310 is enabled		
T311 timer		ms	1000	T311 is enabled		
Periodic CQI reporting mode			PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.		
CQI reporting periodicity		ms	5	Minimum CQI reporting periodicity		
T1		S	4			
T2		S	1.6			
T3		S	1.46			
T4		S	0.4			
Note 1: PDC	CU/DCEICH corross	S anding to	the in supe and	lout of sync transmission		

Table A.7.3.33.1-2: Cell specific test parameters for E-UTRAN HD-FDD (cell # 1) for in-sync radio link monitoring test in DRX for UE category 0

Parameter	Unit	nit Test 1						
		T1 T2 T3 T4						
E-UTRA RF Channel Number		1						
BW _{channel}	MHz	10						
PCFICH/PDCCH/PHICH		R.4 HD-FDD						
parameters specified in								
clause A.3.1.2.3								
OCNG Pattern defined in		OP.2 FDD						
A.3.2.1 (FDD)								
ρ _A , ρ _B				-3				
PCFICH_RB	dB			1				
PDCCH_RA	dB	1						
PDCCH_RB	dB	1						
PBCH_RA	dB	_						
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB	_		2				
PHICH_RA	dB	_		-3				
PHICH_RB	dB	_						
PDSCH_RA	dB	_						
PDSCH_RB	dB	_						
OCNG_RA ^{Note1}	dB	_						
OCNG_RB ^{Note1}	dB							
N_{oc}	dBm/15			-98				
SNR Note 6	kHz dB	-5.4	-9.5	-13.5	-9.4	-5.4		
	UD	-0.4	-9.0	AWGN	-9.4	-0.4		
Propagation condition								
Correlation Matrix and				2x1				
Antenna Configuration	1 1 1 1 1 1			(II) II :				
Note 1: OCNG shall be used					d and a cor	istant total		
transmitted power sp						no poriod T1		
Note 2: The uplink resources								
Note 3: The timers and layer								

- Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 5: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.
- Note 6: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and
 - SNR5 respectively in figure A.7.3.33.1-1.

Table A.7.3.33.1-3: DRX-Configuration for E-UTRAN HD-FDD out-of-sync test for UE category 0

Field	Value	Comment
onDurationTimer	psf5	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf40	
shortDRX	disable	

Table A.7.3.33.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN HD-FDD out-of-sync testing for UE category 0

Field	Value	Comment
TimeAlignmentTimer	infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

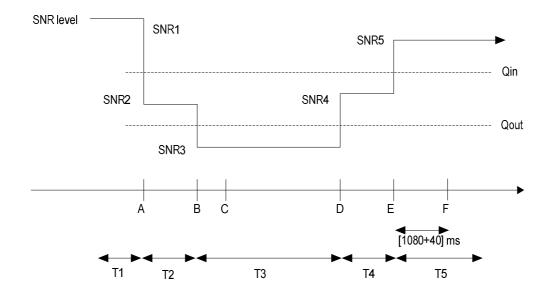


Figure A.7.3.33.1-1: SNR variation for in-sync testing in DRX

A.7.3.33.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (1120 ms after the start of time duration T5) the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the subframe according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.34 E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync for UE Category 0

A.7.3.34.1 Test Purpose and Environment

The purpose of this test is to verify that the TDD category 0 UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in clause 7.11.

The test parameters are given in Tables A.7.3.34.1-1, A.7.3.34.1-2 and A.7.3.34.1-3 below. There is one cell (cell 1), which is the active cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.34.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms.

Table A.7.3.34.1-1: General test parameters for E-UTRAN TDD out-of-sync testing for UE Category 0

Par	ameter	Unit	Value	Comment	
Active cell			Cell 1	Cell 1 is on E-UTRA RF channel number 1	
E-UTRA RF C	E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.	
E-UTRA Chan (BW _{channel})	nel Bandwidth	MHz	10		
CP length			Normal		
Out of sync	DCI format		1A	As defined in section 5.3.3.1.3 in TS 36.212	
transmission parameters (Note 1)	Number of Control OFDM symbols		2	Out of sync threshold Q _{out} and the corresponding	
	Aggregation level	CCE	8	hypothetical PDCCH/PCFICH	
	ρ _A , ρ _B		-3	transmission	
	Ratio of PDCCH to RS EPRE	dB	4	parameters are as specified in section	
	Ratio of PCFICH to RS EPRE	dB	1	7.11.1 and Table 7.11.1-1 respectively.	
DRX			OFF		
Layer 3 filterin	g		Enabled	Counters: N310 = 1; N311 = 1	
T310 timer		ms	0	T310 is disabled	
T311 timer		ms	1000	T311 is enabled	
Periodic CQI reporting mode			PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.	
CQI reporting periodicity		ms	1	Minimum CQI reporting periodicity	
T1		S	1		
T2		S	0.4		
T3		S	0.5		
Note 1: PDCCH/PCFICH corresponding to the out of gype transmission					

1.

Table A.7.3.34.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for out-of-sync radio link monitoring for UE Category 0

Pa	rameter	Unit	Test 1				
	ramoto:	O.I.I.	T1	T2	T3		
E-UTRA	RF Channel			1			
Number							
BW _{channel}		MHz		10			
Special s	ubframe		6				
configura	tion Note 1						
Uplink-do	wnlink		1				
configura	tion Note 1						
	PDCCH/PHIC			R.7 TDD			
	eters defined						
	A.3.1.2.2						
	attern defined						
in A.3.2.2	2 (100)			OP.2 TDD			
ρ _Α , ρ _Β	DD	ID		-3			
PCFICH_		dB		11			
PDCCH_		dB		4			
PDCCH_		dB		4			
PBCH_R		dB					
PBCH_R PSS_RA		dB					
		dB	-3				
SSS_RA		dB					
PHICH_F		dB dB					
		dB					
PDSCH_	PDSCH_RB						
OCNG P	OCNG_RA ^{Note 2}						
OCNG_R	OCNG_RB ^{Note 2}						
		dB dBm/15		-98			
N_{oc}		kHz		-30			
SNR Note	/	dB	-1.6	-5.9	-11.9		
	ion condition	<u> </u>		ETU 70Hz			
	on Matrix and			2x1 Low			
	Configuration			ZX. ZOW			
Note 1:	For special sul	oframe and u	ıplink-dowr	nlink config	urations		
	see Tables 4.2						
Note 2:	OCNG shall be	e used such	that the res	sources in c	ell # 1		
	are fully alloca	ted and a co	nstant tota	I transmitte	d power		
	spectral densit	y is achieved	d for all OF	DM symbol	ls.		
Note 3:	The uplink res				ned to		
	the UE prior to						
Note 4:	The timers and				s are		
N		or to the start of time period T1.					
Note 5:			CH for UEs other than the				
Note C			t as part of OCNG. spond to the signal to noise ratio over				
Note 6:					over		
Note 7:	the cell-specifi The SNR in tin				ed as		
INOLE 1.							
	SNR1, SNR2 and SNR3 respectively in figure A.7.3.34.1-						

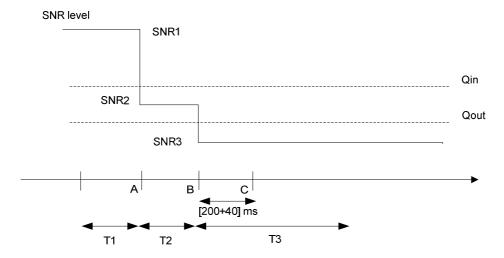


Figure A.7.3.34.1-1: SNR variation for out-of-sync testing

A.7.3.34.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the UE shall transmit uplink signal at least in all uplink subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The UE shall stop transmitting uplink signal no later than time point C (240 ms after the start of the time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.35 E-UTRAN TDD Radio Link Monitoring Test for In-sync for UE category 0

A.7.3.35.1 Test Purpose and Environment

The purpose of this test is to verify that the TDD category 0 UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in clause 7.11.

The test parameters are given in Tables A.7.3.35.1-1 and A.7.3.35.1-2 below. There is one cell (cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.35.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms.

Table A.7.3.35.1-1: General test parameters for E-UTRAN TDD in-sync testing

Pa	rameter	Unit	Value	Comment
			Test 1	
Active cell			Cell 1	Cell 1 is on E-UTRA RF channel number 1
E-UTRA RF C	E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Chanr (BW _{channel})	nel Bandwidth	MHz	10	,
CP length			Normal	
In sync	DCI format		1C	As defined in clause 5.3.3.1.4 in TS 36.212
transmission parameters	Number of Control OFDM symbols		2	In sync threshold Q _{in} and the corresponding
(Note 1)	Aggregation level	CCE	4	hypothetical
	ρ_A , ρ_B		-3	PDCCH/PCFICH
	Ratio of PDCCH to RS EPRE	dB	1	transmission parameters are as specified in clause 7.11.1
	Ratio of PCFICH to RS EPRE	dB	1	and Table 7.11.1-2 respectively.
Out of sync	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212
transmission parameters	Number of Control OFDM symbols		2	Out of sync threshold Q _{out} and the corresponding
(Note 1)	Aggregation level	CCE	8	hypothetical
	ρα, ρв		-3	PDCCH/PCFICH
	Ratio of PDCCH to RS EPRE	dB	4	transmission parameters are as specified in clause 7.11.1
	Ratio of PCFICH to RS EPRE	dB	1	and Table 7.11.1-1 respectively.
DRX			OFF	
Layer 3 filtering			Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	2000	T310 is enabled
T311 timer		ms	1000	T311 is enabled
Periodic CQI reporting mode			PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity		ms	1	Minimum CQI reporting periodicity
T1		S	0.5	
T2		S	0.4	
Т3		S	1.46	
T4		S	0.4	
T5		S	1	

Table A.7.3.35.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for in-sync radio link monitoring test

Parameter	Unit	Test 1					
		T1	T2	T3	T4	T5	
E-UTRA RF Channel Number				1			
BW _{channel}	MHz			10			
Special subframe configuration Note 1				6			
Uplink-downlink configuration				1			
PCFICH/PDCCH/PHICH parameters defined in section A.3.1.2.2		R.7 TDD					
OCNG Pattern defined in A.3.2.2 (TDD)		OP.2 TDD					
ρ_A , ρ_B		-3					
PCFICH_RB	dB	1					
PDCCH_RA	dB	1					
PDCCH_RB	dB			1			
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PHICH_RA	dB	1		-3			
PHICH_RB	dB	1					
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 2}	dB						
OCNG_RB ^{Note 2}	dB						
N_{oc}	dBm/15 kHz	-98					
SNR Note 7	dB	-1.6 -5.9 -11.9 -6.6 -1.6					
Propagation condition				ETU 70Hz	1	.	
Correlation Matrix and Antenna Configuration		2x1 low					

- Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.
- Note 2: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 3: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 4: The timers and layer 3 filtering related parameters are configured prior to the start of time period
- Note 5: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 6: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.
- Note 7: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and
 - SNR5 respectively in figure A.7.3.35.1-1.

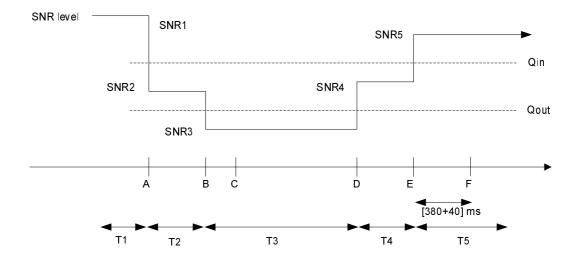


Figure A.7.3.35.1-1: SNR variation for in-sync testing

A.7.3.35.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (420 ms after the start of time duration T5) the UE shall transmit uplink signal at least in all subframes configured for CQI transmission according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.36 E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync in DRX for UE category 0

A.7.3.36.1 Test Purpose and Environment

The purpose of this test is to verify that the TDD category 0 UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell when DRX is used. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in clause 7.11.

The test parameters are given in Tables A.7.3.36.1-1, A.7.3.36.1-2, A.7.3.36.1-3 and A.7.3.36.1-4. There is one cell (cell 1), which is the active cell, in the test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. Figure A.7.3.36.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Table A.7.3.36.1-1: General test parameters for E-UTRAN TDD out-of-sync test in DRX for UE category 0

Parameter		nit	Value	Comment
Active cell			Cell 1	Cell 1 is on E-UTRA
				RF channel number 1
E-UTRA RF Channel Number			1	One E-UTRA TDD
				carrier frequency is
				used.
E-UTRA Channel Band	width MH	ΗZ	10	
(BWchannel)			NI I	
CP length			Normal	A
DCI forr	nat		1A	As defined in
Out of owns				clause 5.3.3.1.3 in TS
Out of sync transmission Number	of		2	36.212 Out of sync threshold
parameters Control			2	Qout and the
(Note 1) symbols	-			corresponding
Aggrega		ìF.	8	hypothetical
level)_ 	O	PDCCH/PCFICH
ρΑ, ρΒ			-3	transmission
Ratio of	d	B	4	parameters are as
PDCCH			•	specified in
EPRE				clause 7.11.1 and
Ratio of	dl	В	1	Table 7.11.1-1
PCFICH	I to RS			respectively.
EPRE				
DRX cycle		ıs	1280	See Table A.7.3.36.1-
				3
Layer 3 filtering			Enabled	Counters:
				N310 = 1; N311 = 1
T310 timer	m	ıs	0	T310 is disabled
T311 timer		ıs	1000	T311 is enabled
Periodic CQI reporting mode			PUCCH 1-0	As defined in table
				7.2.2-1 in TS 36.213.
CQI reporting periodicity		ıs	1	Minimum CQI
				reporting periodicity
T1	S	_	32	
T2 T3	S	6	12.8 13	

Table A.7.3.36.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for out-of-sync radio link monitoring test in DRX for UE category 0

Pa	arameter	Unit		Test 2			
			T1	T2	T3		
E-UTRA	RF Channel			1	'		
Number							
BW _{channel}		MHz 10					
Special s	ubframe			6			
configura	ition Note 1						
I Uplink-do	ownlink	1					
configura	tion Note 1						
PCFICH/	PDCCH/PHICH			R.7 TDD			
	ers defined in						
section A							
	attern defined in			OP.2 TDD)		
A.3.2.2 (TDD)						
ρ _Α , ρ _Β				-3			
PCFICH_		dB		1			
PDCCH_		dB		4			
PDCCH_		dB		4			
PBCH_R		dB					
PBCH_R		dB					
PSS_RA		dB					
SSS_RA		dB		0			
PHICH_F		dB		-3			
PHICH_F		dB					
PDSCH_		dB					
PDSCH_	RB	dB					
OCNG_R	RA Note2	dB					
OCNG_R	RBNotes	dB					
N_{oc}		dBm/15		-98			
SNR Note	7	kHz dB	F. C	0.6	12.6		
	ion condition	uБ	-5.6	-9.6 AWGN	-13.6		
	on Matrix and			2x1			
	Configuration	romo ond i	inlink down	aliak aanfia	urationa		
Note 1:	For special subfi see Tables 4.2-1				urations		
Note 2:					cell # 1		
NOIG Z.	OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power						
	spectral density is achieved for all OFDM symbols.						
Note 3:	The uplink resources for CQI reporting are assigned to						
1.0.0 0.	the UE prior to the start of time period T1.						
Note 4:	The timers and layer 3 filtering related parameters are						
	configured prior to the start of time period T1.						
Note 5:	The signal contains PDCCH for UEs other than the						
	device under test as part of OCNG.						
Note 6:	SNR levels correspond to the signal to noise ratio over						
	the cell-specific	reference s	signal REs	ı			
Note 7:	The SNR in time						
	SNR1, SNR2 an	d SNR3 re	spectively	in figure A.	7.3.36.1-		
1.							

Table A.7.3.36.1-3: DRX-Configuration for E-UTRAN TDD out-of-sync test for UE category 0

Field	Value	Comment
onDurationTimer	psf2	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table A.7.3.36.1-4: TimeAlignmentTimer - Configuration for E-UTRAN TDD out-of-sync testing for UE category 0

Field	Value	Comment
TimeAlianmentTimer	infinity	As specified in clause 6.3.2 in TS
TimeAlignmentTimer	IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	36.331
		For further information see
sr-ConfigIndex	2	clause 6.3.2 in TS 36.331 and
		section10.1 in TS 36.213.

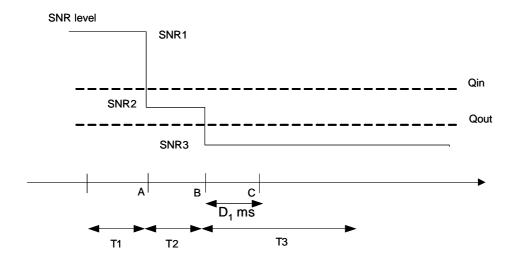


Figure A.7.3.36.1-1: SNR variation for out-of-sync testing in DRX

A.7.3.36.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

During the period from time point A to time point B the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the uplink subframe according to the configured CQI reporting mode (PUCCH 1-0)

The UE shall stop transmitting uplink signal no later than time point C (duration $D_1 = 6500$ ms after the start of time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.37 E-UTRAN TDD Radio Link Monitoring Test for In-sync in DRX for UE category 0

A.7.3.37.1 Test Purpose and Environment

The purpose of this test is to verify that the TDD category 0 UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PCell when DRX is used. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in clause 7.11.

The test parameters are given in Tables A.7.3.37.1-1, A.7.3.37.1-2, A.7.3.37.1-3 and A.7.3.37.1-4. There is one cell (cell 1), which is the active cell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.37.1-1 shows the variation of the downlink SNR in the active cell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Table A.7.3.37.1-1: General test parameters for E-UTRAN TDD in-sync test in DRX for UE category 0

Pa	Parameter		Value	Comment
Active cell			Cell 1	Cell 1 is on E-UTRA RF channel
				number 1
E-UTRA RF Ch	nannel Number		1	One E-UTRA TDD carrier
				frequency is used.
E-UTRA Chann	nel Bandwidth	MHz	10	
(BW _{channel})				
CP length	T		Normal	
	DCI format		1C	As defined in clause 5.3.3.1.4 in TS 36.212
In sync transmission	Number of Control OFDM symbols		2	In sync threshold Q _{in} and the corresponding hypothetical
parameters	Aggregation level	CCE	4	PDCCH/PCFICH transmission
(Note 1)	ρ _A , ρ _B		-3	parameters are as specified in
	Ratio of PDCCH to RS EPRE	dB	1	clause 7.11.1 and Table 7.11.1-2 respectively.
	Ratio of PCFICH to RS EPRE	dB	1	
	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212
Out of sync	Number of Control		2	Out of sync threshold Q _{out} and
transmission	OFDM symbols			the corresponding hypothetical
parameters	Aggregation level	CCE	8	PDCCH/PCFICH transmission
(Note 1)	ρ _A , ρ _B		-3	parameters are as specified in
	Ratio of PDCCH to RS EPRE	dB	4	clause 7.11.1 and Table 7.11.1- 1 respectively.
	Ratio of PCFICH to RS EPRE	dB	1	
DRX cycle		ms	40	See Table A.7.3.37.1-3
Layer 3 filtering)		Enabled	Counters: N310 = 1; N311 = 1
T310 timer		ms	2000	T310 is enabled
T311 timer		ms	1000	T311 is enabled
Periodic CQI re	eporting mode		PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting p	periodicity	ms	1	Minimum CQI reporting periodicity
T1		S	4	
T2		S	1.6	
T3		S	1.46	
T4		S	0.4	
T5		S	4	
Note 1: PDC	CH/PCFICH correspo	ndina to	the in-sync and	out of eyec transmission

Table A.7.3.37.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for in-sync radio link monitoring test in DRX for UE category 0

Parameter	Unit	Test 1						
		T1	T2	Т3	T4	T5		
E-UTRA RF Channel Number		1						
BW _{channel}	MHz	10						
Special subframe configuration Note 1		6						
Uplink-downlink configuration		1						
PCFICH/PDCCH/PHICH				R.7 TDD				
parameters defined in section								
A.3.1.2.2								
OCNG Pattern defined in								
A.3.2.2 (TDD)				OP.2 TDD				
ρ _A , ρ _B		-3						
PCFICH_RB	dB	1						
PDCCH_RA	dB	1						
PDCCH_RB	dB	1						
PBCH_RA	dB							
PBCH_RB	dB	-3						
PSS_RA	dB							
SSS_RA	dB							
PHICH_RA	dB							
PHICH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note2}	dB							
OCNG_RB ^{Note2}	dB							
N_{oc}	dBm/15			-98				
	kHz		T	1		T		
SNR Note 7	dB	-5.6	-9.6	-13.6	-9.6	-5.6		
Propagation condition				AWGN				
Correlation Matrix and Antenna Configuration		2x1						
Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211. Note 2: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.								

- transmitted power spectral density is achieved for all OFDM symbols.

 The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1. Note 3:
- Note 4: The timers and layer 3 filtering related parameters are configured prior to the start of time period
- Note 5: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 6:
- SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs. The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and Note 7:
 - SNR5 respectively in figure A.7.3.37.1-1.

Table A.7.3.37.1-3: DRX-Configuration for E-UTRAN TDD out-of-sync test for UE category 0

Field	Value	Comment
onDurationTimer	psf2	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf40	
shortDRX	disable	

Table A.7.3.37.1-4: TimeAlignmentTimer - Configuration for E-UTRAN TDD out-of-sync testing for UE category 0

Field	Value	Comment
TimeAlignmentTimer	infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	2	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

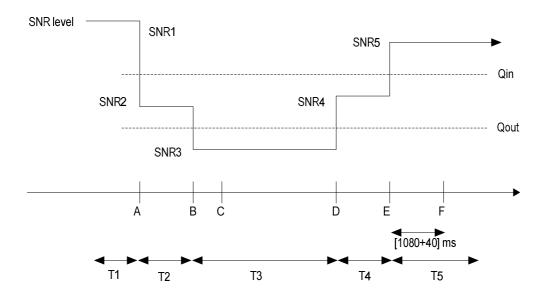


Figure A.7.3.37.1-1: SNR variation for in-sync testing in DRX

A.7.3.37.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (1120 ms after the start of time duration T5) the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the uplink subframe according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.38 E-UTRAN FDD-FDD DC Radio Link Monitoring Test for Out-of-sync in DRX in synchronous DC

A.7.3.38.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync for the purpose of monitoring downlink radio link quality of the PSCell when DRX is used. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.38.1-1, A.7.3.38.1-2, A.7.3.38.1-3, and A.7.3.38.1-4. There are two cells, cell 1 is PCell and cell 2 is PSCell, in the test. The test consists of three successive time periods with time duration of T1, T2 and T3 respectively. Figure A.7.3.38.1-1 shows the variation of the downlink SNR in the PCell and PSCell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1 and cell 2. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Table A.7.3.38.1-1: General test parameters for E-UTRAN FDD out-of-sync tests in DRX in synchronous dual connectivity

Active cell			0 11 4	
OD In white			Cell 1	Cell 1 is PCell on E-UTRA RF channel number 1, and
OD 1			Cell 2	cell 2 is PSCell on E-UTRA RF channel number 2
CP length			Normal	
E-UTRA RF Cha	annel Number		1, 2	Two E-UTRA FDD carrier frequencies are used.
E-UTRA Channe (BWchannel)	el Bandwidth	MHz	5, 10, 20	
Correlation Matr Configuration			2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2
	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212
	Number of Control OFDM symbols		2	Out of sync threshold Q _{out} and the corresponding hypothetical PDCCH/PCFICH transmission parameters
Out of sync transmission	Aggregation level	CCE	8	are as specified in clause 7.6.1 and Table 7.6.1-1
parameters	ρΑ, ρΒ		-3	respectively.
(Note 1)			1	
Ratio of PCFICH to RS EPRE		dB	1	
DRX cycle on ce	ell 1	ms	640	See Table A.7.3.38.1-3
DRX cycle on ce	ell 2	ms	40	See Table A.7.3.38.1-3
Timing offset be cell 2	tween cell 1 and	μS	33	For synchronous dual connectivity
Layer 3 filtering			Enabled	Counters: N310 = 1; N311 = 1; N313 = 1; N314 = 1
T310 timer		ms	0	T310 is disabled
T311 timer		ms	1000	T311 is enabled
T313 timer		ms	0	T313 is disabled
Periodic CQI rep	porting mode		PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting pe	eriodicity	ms	2	Minimum CQI reporting periodicity
T1		S	4	
T2		S	1.6	
T3		S	1.8	

Table A.7.3.38.1-2: Cell specific test parameters for E-UTRAN FDD out-of-sync radio link monitoring in DRX in synchronous dual connectivity

Parameter	Unit		Cell 1			Cell 2		
		T1	T2	Т3	T1	T2	Т3	
E-UTRA RF Channel Number			1			2		
BW _{channel}	MHz		5, 10, 20		5, 10, 20			
Correlation Matrix and Antenna Configuration			2x2 Low			2x2 Low		
PCFICH/PDCCH/PHICH parameters None of the PDCCH are intended for the UE under test		5MHz: R.12 FDD 10MHz: R.7 FDD 20MHz: R.13 FDD			10 20	MHz: R.12 F MHz: R.7 F MHz: R.13 F	DD DD	
OCNG Pattern		101	Hz: OP.16 F MHz: OP.2 F MHz: OP.12 I	DD	101	lHz: OP.16 f MHz: OP.2 f ИHz: OP.12	-DD	
ρΑ, ρΒ			-3			-3		
PCFICH_RB	dB	1			1			
PDCCH_RA	dB	1			1			
PDCCH_RB	dB		1		1			
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PHICH_RA	dB	-3				-3		
PHICH_RB	dB		-3			-3		
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note1}	dB							
OCNG_RB ^{Note1}	dB							
SNR Note 6 (5MHz bandwidth)	dB	-2.3	-2.3	-2.3	-2.3	-5.7	-12.2	
SNR Note 6 (10MHz bandwidth)	dB	-2.3	-2.3	-2.3	-2.3	-6.2	-12.2	
SNR Note 6 (20MHz bandwidth)	dB	-2.9	-2.9	-2.9	-2.9	-6.8	-12.8	
N_{oc}	dBm/15 kHz	-98 -98				-98		
Propagation condition			ETU 70 Hz			ETU 70 Hz		
Time offset to cell1	μS		-			33		

Note 1: OCNG shall be used such that the resources in cell 1 and cell 2 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Table A.7.3.38.1-3: DRX-Configuration for E-UTRAN FDD out-of-sync tests in synchronous dual connectivity

Field	Va	lue	Comment
rieid	Cell 1	Cell 2	Comment
onDurationTimer	psf2	psf2	As specified in clause 6.3.2 in TS 36.331
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	Sf640	Sf40	
shortDRX	disable	disable	

Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.

Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.

Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.

Note 5: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.

Note 6: The SNR in time periods T1, T2, and T3 are denoted as SNR1, SNR2 and SNR3 respectively in figure A.7.3.38.1-1.

Table A.7.3.38.1-4: TimeAlignmentTimer -Configuration for E-UTRAN FDD out-of-sync testing in synchronous dual connectivity

Field	Value	Comment
TimeAlignmentTimer	infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section 10.1 in TS 36.213.

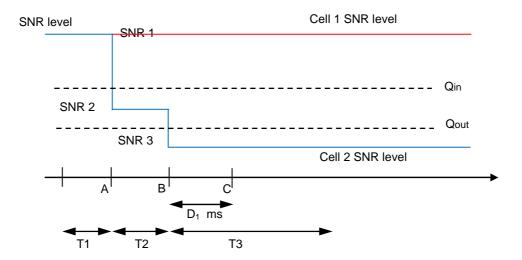


Figure A.7.3.38.1-1 SNR variation for out-of-sync testing in DRX

A.7.3.38.2 Test Requirements

The UE behaviour during time durations T1, T2, and T3 shall be as follows:

During time durations T1, T2 and T3, the UE shall transmit uplink signal at least in all subframes configured for CQI transmission on Cell1.

During the period from time point A to time point B the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the uplink subframe on Cell2.

The UE shall stop transmitting uplink signal no later than time point C (duration D1 = 900 ms after the start of time duration T3) on PSCell.

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.39 E-UTRAN FDD-FDD DC Radio Link Monitoring Test for Out-of-sync in DRX in asynchronous DC

A.7.3.39.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PSCell when DRX is used in asynchronous dual connectivity. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in section 7.6.

The test parameters are given in Tables A.7.3.39.1-1, A.7.3.39.1-2, A.7.3.39.1-3 and A.7.3.39.1-4. There are two cells in the test. Cell 1 is PCell in MCG and cell 2 is PSCell in SCG. Before the test starts the UE is connected to cell 1 on radio channel 1 and to cell 2 on radio channel 2. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. The downlink SNR in cell 1 keeps constant in the test. Figure A.7.3.39.1-1 shows the variation of the downlink SNR in the cell 2 to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1 and cell 2 in asynchronous dual connectivity. For both cells, the UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH

and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Table A.7.3.39.1-1: General test parameters for E-UTRAN FDD out-of-sync in DRX

Parameter		Unit	Value	Comment
Active cells			Cell 1 and cell 2	Cell 1 (PCell) is on E-UTRA RF channel number 1 and cell 2 (PSCell) is on E-UTRA RF channel number 2
CP length			Normal	
Correlation Matrix and Antenna Configuration			2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2
	DCI format		1A	As defined in section 5.3.3.1.3 in TS 36.212
Out of sync transmission parameters	Number of Control OFDM symbols		5MHz: 3 10MHz: 2 20MHz: 2	Out of sync threshold Q _{out} and the corresponding hypothetical PDCCH/PCFICH transmission
(Note 1)	Aggregation level	CCE	8	parameters are as specified in
	ρ _A , ρ _B		-3	section 7.6.1 and Table 7.6.1-1
	Ratio of PDCCH to RS EPRE	dB	1	respectively.
	Ratio of PCFICH to RS EPRE	dB	1	
DRX cycle in cell	DRX cycle in cell 1		640	See Table A.7.3.39.1-3
DRX cycle in cell	DRX cycle in cell 2		40	See Table A.7.3.39.1-3
Layer 3 filtering			Enabled	Counters: N310 = 1; N311 = 1; N313 = 1; N314 = 1;
T310 timer		ms	0	T310 is disabled
T311 timer		ms	1000	T311 is enabled
T313 timer		ms	0	T313 is disabled
Periodic CQI reporting mode			PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity		ms	2	Minimum CQI reporting periodicity
T1		S	4	
T2		S	1.6	
T3		S	1.8	

Note 1: PDCCH/PCFICH corresponding to the out of sync transmission parameters need not be included in the Reference Measurement Channel.

Note 3: Even a UE capable of both synchronous and asynchronous DC operations is required to pass this test case in accordance with the principle defined in section A.3.6.11.

Note 2: The test parameters in the table apply to both cell 1 and cell 2 unless specified otherwise.

Table A.7.3.39.1-2: Cell specific test parameters for E-UTRAN FDD for out-of-sync radio link monitoring in DRX

Parameter		Unit	Cell 1 (PCell)		Cell 2 (PSCell)				
			T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel				1			2		
Number		MHz							
	E-UTRA Channel			5, 10, 20			5, 10, 20		
Bandwidth									
PCFICH/PI				5MHz: R.12 FDD			5MHz: R.12 FDD		
CH parame None of the			-	10MHz: R.7 FDD			10MHz: R.7 FDD		
are intende			20MHz: R.13 FDD			20MHz: R.13 FDD			
UE under t									
Correlation			2x2 Low			2x2 Low			
and Antenr			ZXZ LOW		ZXZ LOW				
Configurati									
OCNG Pat			5MHz: OP.16 FDD						
defined in A			10MHz: OP.2 FDD			5MHz: OP.16 FDD			
(FDD)			20MHz: OP.12 FDD		10MHz: OP.2 FDD				
			2017112. 01 . 12 1 22			20MHz: OP.12 FDD			
ρ _A , ρ _B			-3			-3			
PCFICH_RB		dB	1			1			
PDCCH_RA		dB	1			1			
PDCCH_R		dB	1			1			
PBCH_RA		dB							
PBCH_RB		dB							
PSS_RA		dB							
SSS_RA		dB							
PHICH_RA		dB	-3 -3						
PHICH_RB		dB							
PDSCH_R		dB							
PDSCH_R	B Note1	dB dB							
OCNG_RA	OCNG_RA ^{Note1}								
OCNG_RB ^{Note1}		dB						100	
SNR Note 6	5MHz	dB	-2.3	-2.3	-2.3	-2.3	-5.7	-12.2	
	BW _{channel}	4D	0.0	0.0	0.0	0.0	0.0	40.0	
	10MHz	dB	-2.3	-2.3	-2.3	-2.3	-6.2	-12.2	
	BW _{channel}	dB	-2.9	-2.9	-2.9	-2.9	-6.8	-12.8	
	BW _{channel}	uВ	-2.9	-2.9	-2.9	-2.9	-0.8	-1∠.8	
N_{oc}		dBm/15	-98			-98			
		kHz							
Propagation condition			ETU 70 Hz			ETU 70 Hz			
Receive time offset to cell1 Note 7		μs	-			500			

- Note 1: OCNG shall be used such that the resources in Cell 1 and Cell 2 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1
- Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 5: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.
- Note 6: The SNR in time periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3 respectively in figure A.7.3.39.1-1.
- Note 7: Receive time difference between subframe boundaries of signals received from the two cells at the UE antenna connector including time alignment error between the two cells.

Table A.7.3.39.1-3: DRX-Configuration for E-UTRAN FDD out-of-sync tests

Field	Va	lue	Comment
Field	Cell 1	Cell 2	
onDurationTimer	psf2	psf2	As specified in
drx-InactivityTimer	psf1	psf1	section 6.3.2 in
drx-RetransmissionTimer	psf1	psf1	3GPP TS 36.331
longDRX-CycleStartOffset	sf640	sf40	
shortDRX	disable	disable	

Table A.7.3.39.1-4: TimeAlignmentTimer - Configuration for E-UTRAN FDD out-of-sync testing

Field	Value	Comment
TimeAlignmentTimer	infinity	As specified in section 6.3.2 in 3GPP TS 36.331
sr-ConfigIndex	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

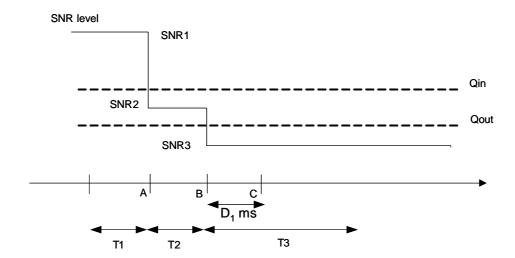


Figure A.7.3.39.1-1 SNR variation for out-of-sync test in DRX

A.7.3.39.2 Test Requirements

The UE behaviour in each test during time durations T1, T2 and T3 shall be as follows:

In test 1 during time durations T1, T2 and T3, the UE shall transmit uplink signal on cell 1 at least once every DRX cycle, in the On-duration part of the cycle in the subframe according to the configured CQI reporting mode (PUCCH 1-0).

In test 1 during the period from time point A to time point B the UE shall transmit uplink signal on cell 2 at least once every DRX cycle, in the On-duration part of the cycle in the subframe according to the configured CQI reporting mode (PUCCH 1-0).

In test 1 the UE shall stop transmitting uplink signal on cell 2 no later than time point C (duration $D_1 = 900$ ms after the start of time duration T3).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.40 E-UTRAN TDD-TDD DC Radio Link Monitoring Test for Out-of-sync in DRX in synchronous DC

A.7.3.40.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync for the purpose of monitoring downlink radio link quality of the PSCell when DRX is used. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.40.1-1, A.7.3.40.1-2, A.7.3.40.1-3, and A.7.3.40.1-4. There are two cells, cell 1 is PCell and cell 2 is PSCell, in the test. The test consists of three successive time periods with time duration of T1, T2 and T3 respectively. Figure A.7.3.40.1-1 shows the variation of the downlink SNR in the PCell and PSCell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1 and cell 2. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 1 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Table A.7.3.40.1-1: General test parameters for E-UTRAN TDD out-of-sync tests in DRX in synchronous dual connectivity

Pa	rameter	Unit	Value	Comment
Active cell			Cell 1	Cell 1 is PCell on E-UTRA RF channel number 1, and
			Cell 2	cell 2 is PSCell on E-UTRA RF channel number 2
CP length			Normal	
E-UTRA RF C	Channel Number		1, 2	Two E-UTRA TDD carrier frequencies are used.
E-UTRA Char (BWchannel)	E-UTRA Channel Bandwidth (BWchannel)		5, 10, 20	
Correlation Matrix and Antenna Configuration			2x2 Low	Correlation Matrix and Antenna Configuration are defined in TS 36.101 [5] Annex B.2.3.2
	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212
Out of sums	Number of Control OFDM symbols		2	Out of sync threshold Q _{out} and the corresponding hypothetical PDCCH/PCFICH transmission parameters
Out of sync transmission	Aggregation level	CCE	8	are as specified in clause 7.6.1 and Table 7.6.1-1
parameters	ρΑ, ρΒ		-3	respectively.
(Note 1)	Ratio of PDCCH to RS EPRE	dB	1	
	Ratio of PCFICH to RS EPRE	dB	1	
DRX cycle on	cell 1	ms	640	See Table A.7.3.40.1-3
DRX cycle on	cell 2	ms	40	See Table A.7.3.40.1-3
Timing offset local 2	between cell 1 and	μS	33	For synchronous dual connectivity
Layer 3 filterin	ng		Enabled	Counters: N310 = 1; N311 = 1; N313 = 1; N314 = 1
T310 timer		ms	0	T310 is disabled
T311 timer	T311 timer		1000	T311 is enabled
T313 timer		ms	0	T313 is disabled
Periodic CQI reporting mode			PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting	periodicity	ms	1	Minimum CQI reporting periodicity
T1		S	4	
T2		S	1.6	
T3		S	1.8	

Note 1: PDCCH/PCFICH corresponding to the out of sync transmission parameters need not be included in the Reference Measurement Channel.

Table A.7.3.40.1-2: Cell specific test parameters for E-UTRAN TDD out-of-sync radio link monitoring in DRX in synchronous dual connectivity

Parameter	Unit		Cell 1			Cell 2		
		T1 T2 T3		T1	T2	Т3		
E-UTRA RF Channel Number		1			2			
BW _{channel}	MHz		5, 10, 20		5, 10, 20			
Correlation Matrix and Antenna Configuration		2x2 Low		2x2 Low				
Special subframe configuration Note1			6			6		
Uplink-downlink configuration Note2			1			1		
PCFICH/PDCCH/PHICH parameters None of the PDCCH are intended for the UE under test		5MHz: R.12 TDD 10MHz: R.7 TDD 20MHz: R.13 TDD			5MHz: R.12 TDD 10MHz: R.7 TDD 20MHz: R.13 TDD			
OCNG Pattern		5MHz: OP.10 TDD 10MHz: OP.2 TDD 20MHz: OP.8 TDD		5MHz: OP.10 TDD 10MHz: OP.2 TDD 20MHz: OP.8 TDD				
ρΑ, ρΒ		-3		-3				
PCFICH_RB	dB	1		1				
PDCCH_RA	dB	1		1				
PDCCH_RB	dB		1		1			
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PHICH_RA	dB		0					
PHICH_RB	dB		-3		-3			
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note3}	dB							
OCNG RB ^{Note3}	dB	,						
SNR Note 8 (5MHz bandwidth)	dB	-1.6	-1.6	-1.6	-1.6	-5.2	-11.9	
SNR Note 8 (10MHz bandwidth)	dB	-2.3	-2.3	-2.3	-2.3	-5.9	-11.9	
SNR Note 8 (20MHz bandwidth)	dB	-3.0	-3.0	-3.0	-3.0	-6.6	-12.6	
N_{oc}	dBm/15 kHz				I			
Propagation condition		ETU 70 Hz			ETU 70 Hz			
Time offset to cell1	μS		- -			33		

Note 1: For the special subframe configuration see table 4.2-1 in TS 36.211.

Note 2: For the uplink-downlink configuration see table 4.2-2 in TS 36.211.

Note 3: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.

Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.

Note 6: The signal contains PDCCH for UEs other than the device under test as part of OCNG.

Note 7: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.

Note 8: The SNR in time periods T1, T2 and T3 is denoted as SNR1, SNR2 and SNR3 respectively in figure A.7.3.40.1-1.

Table A.7.3.40.1-3: DRX-Configuration for E-UTRAN TDD out-of-sync tests in synchronous dual connectivity

Field	Va	lue	Comment
rieid	Cell 1	Cell 2	Comment
onDurationTimer	psf2	psf2	As specified in clause 6.3.2 in TS 36.331
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	Sf640	Sf40	
shortDRX	disable	disable	

Table A.7.3.26.1-4: TimeAlignmentTimer -Configuration for E-UTRAN FDD out-of-sync testing in synchronous dual connectivity

Field	Value	Comment
TimeAlignmentTimer	infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section 10.1 in TS 36.213.

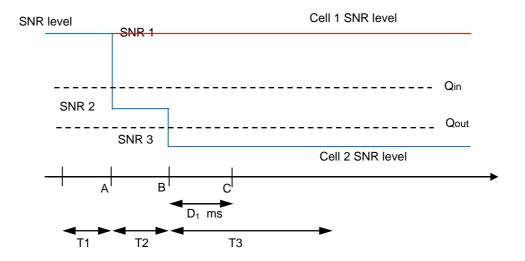


Figure A.7.3.40.1-1 SNR variation for out-of-sync testing in DRX

A.7.3.40.2 Test Requirements

The UE behaviour during time durations T1, T2, and T3 shall be as follows:

During time durations T1, T2 and T3, the UE shall transmit uplink signal at least in all subframes configured for CQI transmission on Cell1.

During the period from time point A to time point B the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the uplink subframe on Cell2.

The UE shall stop transmitting uplink signal no later than time point C (duration D1 = 900 ms after the start of time duration T3) on PSCell.

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.41 E-UTRAN FDD-FDD Radio Link Monitoring Test for In-sync in DRX in synchronous dual connectivity

A.7.3.41.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PSCell when DRX is used in dual connectivity. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.41.1-1, A.7.3.41.1-2, A.7.3.41.1-3 and A.7.3.41.1-4. There are two cells, cell 1 is PCell and cell 2 is PSCell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.41.1-1 shows the variation of the downlink SNR in the PSCell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1 and cell 2. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms. In the test, DRX configuration for PCell and PSCell is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test

Table A.7.3.41.1-1: General test parameters for E-UTRAN FDD-FDD Radio Link Monitoring Test for Insync in DRX in synchronous dual connectivity

I	Parameter		Value	Comment		
E-UTRA RF C	hannel Number		1, 2	Two E-UTRA FDD carrier frequency are used.		
Active cell			Cell 1, Cell 2	Cell 1 is PCell on E-UTRA RF channel number 1, and cell 2 is PSCell on E-UTRA RF channel number 2		
CP length			Normal			
	DCI format		1C	As defined in clause 5.3.3.1.4 in TS 36.212		
In sync transmission	Number of Control OFDM symbols		2	For 10MHz and 20MHz channel BW		
parameters (Note 1)	Number of Control OFDM symbols		3	For 5MHz channel BW		
	Aggregation level	CCE	4	In sync threshold Q _{in} and the corresponding hypothetical		
	ρΑ, ρΒ		0	PDCCH/PCFICH transmission parameters		
	Ratio of PDCCH to RS EPRE		0	are as specified in clause 7.6.1 and Table 7.6.1-2 respectively.		
	Ratio of PCFICH to RS EPRE		4			
	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212		
Out of sync transmission	Number of Control OFDM symbols		2	For 10MHz and 20MHz channel BW		
parameters (Note 1)	Number of Control OFDM symbols		3	For 5MHz channel BW		
	Aggregation level	CCE	8	Out of sync threshold Q _{out} and the corresponding hypothetical		
	ρΑ, ρΒ		0	PDCCH/PCFICH transmission parameters		
	Ratio of PDCCH to RS EPRE	dB	4	are as specified in clause 7.6.1 and Table 7.6.1-1 respectively.		
	Ratio of PCFICH to RS EPRE	dB	4			
DRX cycle on		ms	640	See Table A.7.3.41.1-3		
DRX cycle on		ms	40	See Table A.7.3.41.1-3		
Layer 3 filterin	g		Enabled	Counters: N310 = 1; N311 = 1, N313 = 1, N314 = 1		
T310 timer		ms	2000	T310 is enabled		
T311 timer		ms	1000	T311 is enabled		
T313 timer		ms	2000	T313 is enabled		
Periodic CQI r			PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.		
CQI reporting	periodicity	ms	2	Minimum CQI reporting periodicity		
T1		S	4			
T2		S	1.6			
T3		S	1.46			
T4		S	0.4			
T5 Note 1: PD0		S	4	sync transmission parameters need not be		

Note 1: PDCCH/PCFICH corresponding to the in-sync and out of sync transmission parameters need not be included in the Reference Measurement Channel.

Note 2: Even a UE capable of both synchronous and asynchronous DC operations is required to pass this test case in accordance with the principle defined in section A.3.11.

Note 7:

Table A.7.3.41.1-2: Cell specific test parameters for E-UTRAN FDD-FDD Radio Link Monitoring Test for In-sync in DRX in synchronous dual connectivity

Doza	Parameter		Cell 1(PCell)	Cell 2 (PSCell)					
		Unit	T1 ~ T5	T1	T2	T3	T4	T5	
E-UTRA RF Ch	annel Number		1			2			
BW _{channel}		MHz	5: $N_{RB,c} = 25$	5: N _{RB,c} = 25					
			10: $N_{RB,c} = 50$		10: $N_{RB,c} = 50$				
			20: N _{RB,c} = 100			$: N_{RB,c} = 1$			
PCFICH/PDCCI			5MHz: R.11 FDD			Hz: R.11 F			
parameters defi	ned in A.3.1.2.1		10MHz: R.6 FDD			/Hz: R.6 F			
00110 5 #	I (' I' A 0 0 4		20MHz: R.10 FDD			Hz: R.10			
	defined in A.3.2.1		5MHz: OP.16 FDD			Iz: OP.16			
(FDD)			10MHz: OP.2 FDD			Hz: OP.2			
			20MHz: OP.12 FDD		ZUIVII	<u>1z: OP.12</u>	עטד		
ρ _Α , ρ _Β PCFICH_RB		dB	0 0 4						
PDCCH_RA		dB	0			0			
PDCCH_RB		dB	0			0			
PBCH_RA		dB	0			<u> </u>			
PBCH_RB		dB							
PSS_RA		dB	1						
SSS_RA		dB	1						
PHICH_RA		dB							
PHICH_RB		dB	0 0						
PDSCH_RA									
PDSCH_RB		dB	=						
OCNG_RA ^{Note1}		dB							
OCNG_RB ^{Note1}		dB							
	5MHz BW _{channel}		-2.3	-2.3	-5.7	-12.2	-7.3	-2.3	
SNR Note 6	10MHz	dB	-4.7	-4.7	-9.5	-13.5	-8.7	-4.7	
	BW _{channel}								
	20MHz	1	-4.7	-4.7	-9.5	-13.5	-8.7	-4.7	
	BW _{channel}								
N_{oc}		dBm/15 kHz			-98				
Propagation cor			AWGN			AWGN			
Correlation Matrix and Antenna 1x2 1x2 Configuration									
Receive time of	fset to cell1 Note 7	μS	- 33						
Note 1: OCNG shall be used such that the resources in cell 1 and cell 2 are fully allocated and a constant total						tal			
	transmitted power spectral density is achieved for all OFDM symbols. Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.								
Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.									
Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.									
			noise ratio over the cell-				s.		
Note 6: The S		periods T1, T2	2, T3, T4 and T5 is deno					and	

Table A.7.3.41.1-3: DRX-Configuration for E-UTRAN FDD-FDD Radio Link Monitoring Test for In-sync in DRX in synchronous dual connectivity

antenna connector including time alignment error between the two cells.

Receive time difference between subframe boundaries of signals received from the two cells at the UE

Field	Va	lue	Comment
Field	Cell 1	Cell 2	
onDurationTimer	psf2	psf2	As specified in
drx-InactivityTimer	psf1	psf1	section 6.3.2 in
drx-RetransmissionTimer	psf1	psf1	3GPP TS 36.331
longDRX-CycleStartOffset	sf640	sf40	
shortDRX	disable	disable	

Table A.7.3.41.1-4: TimeAlignmentTimer -Configuration for E-UTRAN FDD-FDD Radio Link Monitoring
Test for In-sync in DRX in synchronous dual connectivity

Field	Value	Comment
TimeAlignmentTimer	infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

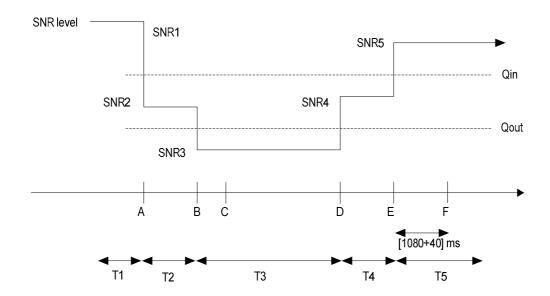


Figure A.7.3.41.1-1 SNR variation of cell 2 (PSCell) for in-sync testing in DRX

A.7.3.41.2 Test Requirements

The UE behaviour during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (1120 ms after the start of time duration T5) the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the subframe according to the configured CQI reporting mode (PUCCH 1-0) on PCell and PSCell.

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.42 E-UTRAN FDD-FDD DC Radio Link Monitoring Test for In-sync in DRX in asynchronous DC

A.7.3.42.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PSCell when DRX is used in asynchronous dual connectivity. This test will partly verify the E-UTRAN FDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.42.1-1, A.7.3.42.1-2, A.7.3.42.1-3 and A.7.3.42.1-4. There are two cells in the test. Cell 1 is PCell in MCG and cell 2 is PSCell in SCG. Before the test starts the UE is connected to cell 1 on radio channel 1 and to cell 2 on radio channel 2. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. The downlink SNR in cell 1 keeps constant in the test. Figure A.7.3.42.1-1 shows the variation of the downlink SNR in cell 2 to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1 and cell 2 in asynchronous dual connectivity. For both cell 1 and cell 2, the UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms. In the test, DRX configuration is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Table A.7.3.42.1-1: General test parameters for E-UTRAN FDD in-sync test in DRX

F	Parameter	Unit	Value	Comment
Active cells			Cell 1 and cell 2	Cell 1 (PCell) is on E-UTRA RF channel number 1 and cell 2 (PSCell) is on E-UTRA RF channel number 2
CP length			Normal	
Antenna Con			1x2	
	DCI format		1C	As defined in clause 5.3.3.1.4 in TS 36.212
In sync transmissio n	Number of Control OFDM symbols		5MHz: 3 10MHz: 2 20MHz: 2	In sync threshold Q _{in} and the corresponding hypothetical PDCCH/PCFICH transmission
parameters	Aggregation level	CCE	4	parameters are as specified in
(Note 1)	ρ _A , ρ _B		0	clause and Table 7.6.1-2
	Ratio of PDCCH to RS EPRE		0	respectively.
	Ratio of PCFICH to RS EPRE		4	
	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212
Out of sync transmissio	Number of Control OFDM symbols		2	Out of sync threshold Q _{out} and the corresponding hypothetical
n	Aggregation level	CCE	8	PDCCH/PCFICH transmission
parameters	ρ _A , ρ _B		0	parameters are as specified in
(Note 1)	Ratio of PDCCH to RS EPRE	dB	4	clause 7.6.1 and Table 7.6.1-1 respectively.
	Ratio of PCFICH to RS EPRE	dB	4	
DRX cycle in		ms	640	See Table A.7.3.42.1-3
DRX cycle in		ms	40	See Table A.7.3.42.1-3
Layer 3 filterin	Layer 3 filtering		Enabled	Counters: N310 = 1; N311 = 1; N313 = 1; N314 = 1
T310 timer		ms	2000	T310 is enabled
T311 timer		ms	1000	T311 is enabled
T313 timer		ms	2000	T313 is enabled
Periodic CQI reporting mode			PUCCH 1- 0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting periodicity		ms	2	Minimum CQI reporting periodicity
T1		S	4	
T2		S	1.6	
T3		S	1.46	
T4		S	0.4	
T5	<u> </u>	S	4	
	OOLI/DOEIOLI			

Note 1: PDCCH/PCFICH corresponding to the in-sync and out of sync transmission parameters need not be included in the Reference Measurement Channel.

Note 2: The parameters in the table apply to both cell 1 and cell 2 unless defined otherwise.

Note 3: Even a UE capable of both synchronous and asynchronous DC operations is required to pass this test case in accordance with the principle defined in section A.3.6.11.

Table A.7.3.42.1-2: Cell specific test parameters for E-UTRAN FDD for in-sync radio link monitoring in DRX

	Parameter		Cell 1 (PCell)	Cell 2 (PSCell)					
		Unit	T1 ~ T5	T1	T2	T3	T4	T5	
E-UTRA RF	Channel Number		1			2			
E-UTRA Cha	annel Bandwidth	MHz	5, 10, 20			5, 10, 20			
(BW _{channel})									
PCFICH/PD	PCFICH/PDCCH/PHICH		5MHz: R.11	5MHz: R.11 FDD					
parameters.			FDD			MHz: R.6 F			
None of the	PDCCH are intended		10MHz: R.6		201	//Hz: R.10	FDD		
for the UE u	nder test.		FDD						
			20MHz: R.10						
			FDD						
OCNG Patte	ern		5MHz: OP.16						
			FDD		5M	Hz: OP.16	FDD		
			10MHz: OP.2		_	//Hz: OP.2			
			FDD		_	Hz: OP.12			
			20MHz: OP.12		2011	112. 01 .12	. ו טט		
			FDD						
ρ _A , ρ _B			0		0				
PCFICH_RE		dB	4	4					
PDCCH_RA		dB	0	0					
PDCCH_RB		dB	0	0					
PBCH_RA		dB							
PBCH_RB		dB							
PSS_RA		dB							
SSS_RA		dB		0					
PHICH_RA		dB	0						
PHICH_RB		dB			-				
PDSCH_RA		dB							
PDSCH_RB	010.1	dB							
OCNG_RAN	ote i	dB							
OCNG_RBN		dB			1	1	1	1	
SNR Note 6	5MHz BW _{channel}	dB	-2.3	-2.3	-5.7	-12.2	-7.3	-2.3	
	10MHz BW _{channel}	dB	-4.7	-4.7	-9.5	-13.5	-8.7	-4.7	
	20MHz BW _{channel}	dB	-4.7	-4.7	-9.5	-13.5	-8.7	-4.7	
N_{oc} dl		dBm/15 kHz		<u>I</u>	-98				
Propagation					AWGN				
Receive time	e offset to cell1 Note 7	μs	-		<u> </u>	500			
tra	CNG shall be used suc ansmitted power spectra	al density is ac	chieved for all OFD	M symbol	s.			otal	
Note 2: T	Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.								

Note 2: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.

Table A.7.3.42.1-3: DRX-Configuration for E-UTRAN FDD out-of-sync tests

Field	Cell 1	Cell 2	Comment
onDurationTimer	psf2	psf2	As specified in clause 6.3.2 in
drx-InactivityTimer	psf1	psf1	TS 36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf640	sf40	
shortDRX	disable	disable	

Note 3: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.

Note 4: The signal contains PDCCH for UEs other than the device under test as part of OCNG.

Note 5: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.

Note 6: The SNR of cell 2 in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and SNR5 respectively in figure A.7.3.6.1-1.

Note 7: Receive time difference between subframe boundaries of signals received from the two cells at the UE antenna connector including time alignment error between the two cells..

Table A.7.3.42.1-4: TimeAlignmentTimer - Configuration for E-UTRAN FDD out-of-sync testing

Field	Value	Comment
TimeAlignmentTimer	infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

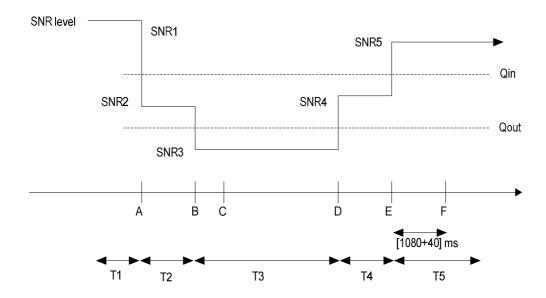


Figure A.7.3.42.1-1 Cell 2 SNR variation for in-sync testing in DRX

A.7.3.42.2 Test Requirements

The UE behaviour in each test during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (1120 ms after the start of time duration T5) the UE shall transmit uplink signal on cell 2 at least once every DRX cycle, in the On-duration part of the cycle in the subframe according to the configured CQI reporting mode (PUCCH 1-0).

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.3.43 E-UTRAN TDD-TDD Radio Link Monitoring Test for In-sync in DRX in synchronous dual connectivity

A.7.3.43.1 Test Purpose and Environment

The purpose of this test is to verify that the UE properly detects the out of sync and in sync for the purpose of monitoring downlink radio link quality of the PSCell when DRX is used in dual connectivity. This test will partly verify the E-UTRAN TDD radio link monitoring requirements in clause 7.6.

The test parameters are given in Tables A.7.3.43.1-1, A.7.3.43.1-2, A.7.3.43.1-3 and A.7.3.43.1-4. There are two cells, cell 1 is PCell and cell 2 is PSCell, in the test. The test consists of five successive time periods, with time duration of T1, T2, T3, T4 and T5 respectively. Figure A.7.3.43.1-1 shows the variation of the downlink SNR in the PSCell to emulate out-of-sync and in-sync states. Prior to the start of the time duration T1, the UE shall be fully synchronized to cell 1 and cell 2. The UE shall be configured for periodic CQI reporting in PUCCH 1-0 mode with a reporting periodicity of 2 ms. In the test, DRX configuration for PCell and PSCell is enabled and DRX inactivity timer has already been expired, i.e. UE tries to decode PDCCH and to send periodic CQI during the period when On-duration timer is running. Time alignment timers shall be set to "infinity" so that UL timing alignment is maintained during the test.

Table A.7.3.43.1-1: General test parameters for E-UTRAN TDD-TDD Radio Link Monitoring Test for Insync in DRX in synchronous dual connectivity

Parameter		Unit	Value	Comment
E-UTRA RF C	E-UTRA RF Channel Number		1, 2	Two E-UTRA TDD carrier frequency are used.
Active cell			Cell 1, Cell 2	Cell 1 is PCell on E-UTRA RF channel number 1, and cell 2 is PSCell on E-UTRA RF channel number 2
CP length			Normal	
	DCI format		1C	As defined in clause 5.3.3.1.4 in TS 36.212
In sync transmission	Number of Control OFDM symbols		2	For 10MHz and 20MHz channel BW
parameters (Note 1)	Number of Control OFDM symbols		3	For 5MHz channel BW
	Aggregation level	CCE	4	In sync threshold Q _{in} and the corresponding hypothetical
	ρΑ, ρΒ		0	PDCCH/PCFICH transmission parameters
	Ratio of PDCCH to RS EPRE		0	are as specified in clause 7.6.1 and Table 7.6.1-2 respectively.
	Ratio of PCFICH to RS EPRE		4	
	DCI format		1A	As defined in clause 5.3.3.1.3 in TS 36.212
Out of sync transmission	Number of Control OFDM symbols		2	For 10MHz and 20MHz channel BW
parameters (Note 1)	Number of Control OFDM symbols		3	For 5MHz channel BW
	Aggregation level	CCE	8	Out of sync threshold Q _{out} and the corresponding hypothetical
	ρΑ, ρΒ		0	PDCCH/PCFICH transmission parameters
	Ratio of PDCCH to RS EPRE	dB	4	are as specified in clause 7.6.1 and Table 7.6.1-1 respectively.
	Ratio of PCFICH to RS EPRE	dB	4	
DRX cycle on		ms	640	See Table A.7.3.43.1-3
DRX cycle on		ms	40	See Table A.7.3.43.1-3
Layer 3 filterin	g		Enabled	Counters: N310 = 1; N311 = 1, N313 = 1, N314 = 1
T310 timer		ms	2000	T310 is enabled
T311 timer		ms	1000	T311 is enabled
T313 timer		ms	2000	T313 is enabled
Periodic CQI r			PUCCH 1-0	As defined in table 7.2.2-1 in TS 36.213.
CQI reporting	periodicity	ms	2	Minimum CQI reporting periodicity
T1		S	4	
T2		S	1.6	
T3		S	1.46	
T4		S	0.4	
T5 Note 1: PD0		S	4	sync transmission parameters need not be

Note 1: PDCCH/PCFICH corresponding to the in-sync and out of sync transmission parameters need not be included in the Reference Measurement Channel.

Note 2: Even a UE capable of both synchronous and asynchronous DC operations is required to pass this test case in accordance with the principle defined in section A.3.11.

Table A.7.3.43.1-2: Cell specific test parameters for E-UTRAN TDD-TDD Radio Link Monitoring Test for In-sync in DRX in synchronous dual connectivity

Do		l lmit	Cell 1(PCell)	Cell 2 (PSCell)				
Pa	rameter	Unit	T1 ~ T5	T1	T2	T3	T4	T5
E-UTRA RF Channel Number			1			2		
BW _{channel}		MHz	5: N _{RB,c} = 25		5: N _{RB,c} = 25			
			10: $N_{RB,c} = 50$		10	$O: N_{RB,c} = $	50	
			20: N _{RB,c} = 100		20	: N _{RB,c} = 1	00	
Special subfra	me		6			6		
configuration	ote i							
	nk configuration Note2		1			1		
PCFICH/PDC			5MHz: R.11 TDD			Hz: R.11 ⁻		
parameters de	fined in A.3.1.2.1		10MHz: R.6 TDD			//Hz: R.6		
			20MHz: R.10 TDD		20M	Hz: R.10	TDD	
	defined in A.3.2.1		5MHz: OP.10 TDD		5ME	lz: OP.10	TDD	
(FDD)			10MHz: OP.2 TDD		-	Hz: OP.2		
			20MHz: OP.8 TDD			Hz: OP.8		
ρ _A , ρ _B		-ID	0			0		
PCFICH_RB		dB	4		4			
PDCCH_RA		dB	0		0			
PDCCH_RB		dB	0	0				
PBCH_RA		dB						
PBCH_RB		dB						
PSS_RA		dB	4					
SSS_RA		dB						
PHICH_RA		dB	0	0				
PHICH_RB		dB						
PDSCH_RA		dB						
PDSCH_RB	1	dB						
OCNG_RA ^{Note}	1	dB						
OCNG_RB ^{Note}		dB				10.4	0.4	
SNR Note 6	5MHz BW _{channel}	ID.	-5.1	-5.1	-9.1	-13.1	-9.1	-5.1
SNR	10MHz	dB	-5.1	-5.1	-9.1	-13.1	-9.1	-5.1
	BW _{channel}							
	20MHz		-5.1	-5.1	-9.1	-13.1	-9.1	-5.1
BW _{channel}								
N_{oc}		dBm/15 kHz			-98			
Propagation condition			AWGN			AWGN		
Correlation Matrix and Antenna			1x2			1x2		
Configuration								
Receive time of	offset to cell1 Note 9	μS	-			33		
No. 4. 5. d. S.								

- Note 1: For the special subframe configuration see table 4.2-1 in TS 36.211.
- Note 2: For the uplink-downlink configuration see table 4.2-2 in TS 36.211.
- Note 3: OCNG shall be used such that the resources in cell # 1 are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 4: The uplink resources for CQI reporting are assigned to the UE prior to the start of time period T1.
- Note 5: The timers and layer 3 filtering related parameters are configured prior to the start of time period T1.
- Note 6: The signal contains PDCCH for UEs other than the device under test as part of OCNG.
- Note 7: SNR levels correspond to the signal to noise ratio over the cell-specific reference signal REs.
- Note 8: The SNR in time periods T1, T2, T3, T4 and T5 is denoted as SNR1, SNR2, SNR3, SNR4 and SNR5 respectively in figure A.7.3.43.1-1.
- Note 9: Receive time difference between subframe boundaries of signals received from the two cells at the UE antenna connector including time alignment error between the two cells.

Table A.7.3.43.1-3: DRX-Configuration for E-UTRAN TDD-TDD Radio Link Monitoring Test for In-sync in DRX in synchronous dual connectivity

Field	Va	lue	Comment
Field	Cell 1	Cell 2	
onDurationTimer	psf2	psf2	As specified in
drx-InactivityTimer	psf1	psf1	section 6.3.2 in
drx-RetransmissionTimer	psf1	psf1	3GPP TS 36.331
longDRX-CycleStartOffset	sf640	sf40	
shortDRX	disable	disable	

Table A.7.3.43.1-4: TimeAlignmentTimer -Configuration for E-UTRAN TDD-TDD Radio Link Monitoring
Test for In-sync in DRX in synchronous dual connectivity

Field Value		Comment
TimeAlignmentTimer	infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

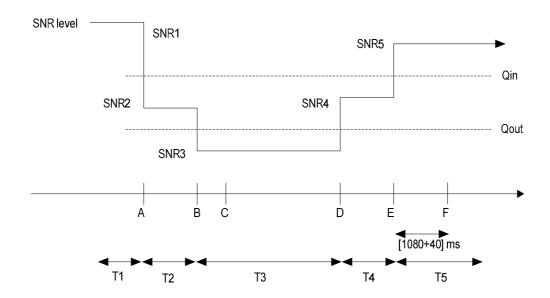


Figure A.7.3.43.1-1 SNR variation of cell 2 (PSCell) for in-sync testing in DRX

A.7.3.43.2 Test Requirements

The UE behaviour during time durations T1, T2, T3, T4 and T5 shall be as follows:

During the period from time point A to time point F (1120 ms after the start of time duration T5) the UE shall transmit uplink signal at least once every DRX cycle, in the On-duration part of the cycle in the subframe according to the configured CQI reporting mode (PUCCH 1-0) on PCell and PSCell.

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.4 Interruption for Dual Connectivity

A.7.4.1 E-UTRAN FDD-FDD DC interruption at transitions between active and non-active during DRX in synchronous DC

A.7.4.1.1 Test Purpose and Environment

The purpose of this test is to verify that when PCell is in non-DRX and PSCell is in DRX, PCell interruptions due to transitions from active to non-active and from non-active to active during PSCell DRX the UE missed ACK/NACK does not exceed the limits. This test will verify the missed ACK/NACK rate for FDD PCell in dual connectivity requirements in clause 7.12.2.

The test parameters are given in Table A.7.4.1.1-1, A.7.4.1.1-2 and A.7.4.1.1-3 below. In the test there are two cells: Cell1 and Cell2. Cell1 is PCell and Cell2 is PSCell. PCell is continuously scheduled in DL while PSCell is not scheduled and has DRX configured. The test consists of one time period, with duration of T1. Prior to the start of the time duration T1, the UE shall be fully synchronized to Cell1 and Cell2. Cell1 shall be configured as PCell and Cell2 shall be configured as PSCell. Prior to start of T1 the DRX inactivity timer for the PSCell have already expired. During T1 the UE shall be continuously scheduled on PCell while not scheduled on PSCell.

Table A.7.4.1.1-1: General test parameters for E-UTRAN FDD-FDD DC interruption at transitions between active and non-active during DRX in synchronous DC

Parameter	Unit	Value	Comment
E-UTRA RF Channel Number		1, 2	Two radio channels are used for this test.
Active PCell		Cell1	PCell on RF channel number 1.
Configured PSCell		Cell2	PSCell on RF channel number 2.
CP length		Normal	
DRX		ON	DRX related parameters are defined in Table A.8.23.4.1-3
Measurement gap pattern Id		OFF	
T1	S	10	

Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Note 2: A UE capable of both synchronous and asynchronous DC operations is only required to pass this test case in accordance with the principle defined in section A.3.11.

Table A.7.4.1.1-2: Cell specific test parameters for E-UTRAN FDD-FDD DC interruption at transitions between active and non-active during DRX in synchronous DC

Parameter	Unit	Cell1	Cell2
		T1	T1
E-UTRA RF Channel		1	2
Number			_
BW _{channel}	MHz	$5MHz: N_{RB,c} = 25$	5MHz: N _{RB,c} = 25
		10MHz: $N_{RB,c} = 50$	10MHz: $N_{RB,c} = 50$
PDSCH parameters:		20MHz: $N_{RB,c} = 100$ 5MHz: R.TBD FDD	20MHz: N _{RB,c} = 100 5MHz: R.5 FDD
DL Reference		10MHz: R.3 FDD	10MHz: R.0 FDD
Measurement Channel		20MHz: R.6 FDD	20MHz: R.4 FDD
PCFICH/PDCCH/PHICH			
parameters:		5MHz: R.11 FDD	5MHz: R.11 FDD
DL Reference		10MHz: R.6 FDD	10MHz: R.6 FDD
Measurement Channel		20MHz: R.10 FDD	20MHz: R.10 FDD
OCNG Patterns		5MHz: OP.16 FDD	5MHz: OP.15 FDD
		10MHz: OP.2 FDD	10MHz: OP.1 FDD
		20MHz: OP.12 FDD	20MHz: OP.11 FDD
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB dB		
PHICH_RA PHICH_PB	dB dB	0	0
PDCCH_RA	dB	U	O
PDCCH_RA	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA ^{Note 1}	dB		
OCNG_RB ^{Note 1}	dB		
N_{oc} Note 2	dBm/15	404	404
¹ V _{oc}	KHz	-101	-101
\hat{E}_s/N_{oc}	dB	19	19
\hat{E}_{s}/I_{ot}	dB	19	19
RSRP Note 3	dBm/15	-82	-82
SCH_RP Note 3	KHz dBm/15		
	KHz	-82	-82
lo Note 3	dBm/Ch	-54.16	-54.16
	BW	+10log	+10log
		(N _{RB,c} /50)	(N _{RB,c} /50)
Propagation Condition		AWGN	AWGN
Correlation Matrix and Antenna Configuration		1x2 Low	1x2 Low
Time offset to cell1 Note 4	μs	-	33
11 1 1 0010 1 111			

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.7.4.1.1-3: DRX-Configuration for E-UTRAN FDD-FDD DC interruption at transitions between active and non-active during DRX in synchronous DC

Field	Cell1	Cell2	Comment
rieiu	Value	Value	
onDurationTimer	psf1	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer ^{Note 1}	psf1	psf1	36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf80	Sf160	
shortDRX	disable	disable	
Note 1: UE is continuously scheduled	l in PCell		

A.7.4.1.2 Test Requirements

The UE shall shall be continuously scheduled in PCell during the entire length of T1. UE shall not be scheduled in PSCell during T1. During the time duration T1 the UE shall transmit at leat 99% of ACK/NACK on PCell.

The UE shall not miss transmitting two consequtive ACK/NACK.

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.4.2 E-UTRAN TDD-TDD DC interruption at transitions between active and non-active during DRX in synchronous DC

A.7.4.2.1 Test Purpose and Environment

The purpose of this test is to verify that when PCell is in non-DRX and PSCell is in DRX, PCell interruptions due to transitions from active to non-active and from non-active to active during PSCell DRX the UE missed ACK/NACK does not exceed the limits. This test will verify the missed ACK/NACK rate for TDD PCell in dual connectivity requirements in clause 7.12.2.

The test parameters are given in Table A.7.4.2.1-1, A.7.4.2.1-2 and A.7.4.2.1-3 below. In the test there are two cells: Cell1 and Cell2. Cell1 is PCell and Cell2 is PSCell. PCell is continuously scheduled in DL while PSCell is not scheduled and has DRX configured. The test consists of one time period, with duration of T1. Prior to the start of the time duration T1, the UE shall be fully synchronized to Cell1 and Cell2. Cell1 shall be configured as PCell and Cell2 shall be configured as PSCell. Prior to start of T1 the DRX inactivity timer for the PSCell have already expired. During T1 the UE shall be continuously scheduled on PCell while not scheduled on PSCell.

Table A.7.4.2.1-1: General test parameters for E-UTRAN TDD-TDD DC interruption at transitions between active and non-active during DRX in synchronous DC

Parameter	Unit	Value	Comment
E-UTRA RF Channel		1, 2	Two radio channels are used for this test.
Number		1, 2	
Active PCell		Cell1	PCell on RF channel number 1.
Configured PSCell		Cell2	PSCell on RF channel number 2.
Special subframe		6	As specified in table 4.2-1 in TS 36.211.
configuration			Applicable to cell 1
Uplink-downlink		1	As specified in table 4.2-1 in TS 36.211.
configuration			Applicable to Cell1
CP length		Normal	As specified in table 4.2-2 in TS 36.211.
			Applicable to Cell1
DRX		ON	DRX related parameters are defined in
		ON	Table A.8.23.4.1-3
Measurement gap pattern		OFF	
ld		OFF	
T1	S	10	

Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Note 2: A UE capable of both synchronous and asynchronous DC operations is only required to pass this test case in accordance with the principle defined in section A.3.11.

Table A.7.4.2.1-2: Cell specific test parameters for E-UTRAN TDD-TDD DC interruption at transitions between active and non-active during DRX in synchronous DC

Parameter	Unit	Cell1	Cell2			
		T1	T1			
E-UTRA RF Channel		1	2			
Number		•				
BW _{channel}	MHz	5MHz: $N_{RB,c} = 25$	5MHz: $N_{RB,c} = 25$			
		10MHz: $N_{RB,c} = 50$	10MHz: $N_{RB,c} = 50$			
		20MHz: $N_{RB,c} = 100$	20MHz: $N_{RB,c} = 100$			
PDSCH parameters:		5MHz: R.4 TDD	5MHz: R.TBD TDD			
DL Reference		10MHz: R.0 TDD	10MHz: R.TBD TDD			
Measurement Channel		20MHz: R.4 FDD	20MHz: R.TBD TDD			
PCFICH/PDCCH/PHICH		5MHz: R.11 TDD	5MHz: R.11 TDD			
parameters:		10MHz: R.6 TDD	10MHz: R.6 TDD			
DL Reference		20MHz: R.10 TDD	20MHz: R.10 TDD			
Measurement Channel		-				
OCNG Patterns		5MHz: OP.10 TDD	5MHz: OP.9 TDD			
		10MHz: OP.2 TDD	10MHz: OP.1 TDD			
		20MHz: OP.8 TDD	20MHz: OP.7 TDD			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_PB	dB	0	0			
PDCCH_RA	dB					
PDCCH_PB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{oc}^{ m Note 2}$	dBm/15	404	404			
1 voc	KHz	-101	-101			
\hat{E}_s/N_{oc}	dB	19	19			
		19	13			
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	19	19			
RSRP Note 2	dBm/15					
RSRP	KHz	-82	-82			
SCH_RP Note 2	dBm/15					
SCI_KF	KHz	-82	-82			
lo Note 3	dBm/Ch	-54.16	-54.16			
	BW	+10log	+10log			
		(N _{RB,c} /50)	(N _{RB,c} /50)			
Propagation Condition		AWGN	AWGN			
Correlation Matrix and		AVVOIN				
Antenna Configuration		1x2 Low	1x2 Low			
Time offset to cell1 Note 3	110	-	33			
Time offset to cell 1 Note 3						

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.7.4.2.1-3: DRX-Configuration for E-UTRAN TDD-TDD DC interruption at transitions between active and non-active during DRX in synchronous DC

Field	Cell1	Cell2	Comment
Field	Value	Value	
onDurationTimer	psf1	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer ^{Note 1}	psf1	psf1	36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf80	Sf160	
shortDRX	disable	disable	
Note 1: UE is continuously schedule	ed in PCell		

A.7.4.2.2 Test Requirements

The UE shall shall be continuously scheduled in PCell during the entire length of T1. UE shall not be scheduled in PSCell during T1. During the time duration T1 the UE shall transmit at leat 99% of ACK/NACK on PCell.

The UE shall not miss transmitting two consequtive ACK/NACK.

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.4.3 E-UTRAN FDD-FDD Interruption at transitions between active and non-active during DRX in asynchronous dual connectivity

A.7.4.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE fulfils the requirement on interruptions on PCell at transitions between active and non-active during DRX in TS36.133 section 7.12.2.

The test parameters are given in Table A.7.4.3.1-1, Table A.7.4.3.1-2 and Table A.7.4.3.1-3 below. In the test there are two cells: Cell 1 and Cell 2. Cell 1 is PCell on the FDD primary component (RF channel 1). Cell 2 is PSCell on the FDD secondary component (RF channel 2). The test consists of 1 time period, with time duration of T1. PDCCH indicating a new transmission on PCell shall be sent continuously during the whole time duration to ensure UE would not enter DRX state on PCell. PSCell is in DRX state with 320ms DRX cycle.

Table A.7.4.3.1-1: General test parameters for E-UTRAN FDD-FDD Interruption at transitions between active and non-active during DRX in asynchronous dual connectivity

Parameter	Unit	Value	Comment				
E-UTRA RF Channel		1, 2	Two radio channels are used for this test				
Number		1, 2					
Active Cell			Cell 1 is PCell on E-UTRA RF channel				
		Cell 1, Cell 2	number 1, and cell 2 is PSCell on E-UTRA				
			RF channel number 2				
CP length		Normal					
DRX on Cell1		OFF					
DRX on Cell2	ms	320					
Filter coefficient		0	L3 filtering is not used				
T1	S	5					
Note 1: Even a UE capable	Note 1: Even a UE capable of both synchronous and asynchronous DC operations is required to pass						

Table A.7.4.3.1-2: Cell specific test parameters for E-UTRAN FDD-FDD Interruption at transitions between active and non-active during DRX in asynchronous dual connectivity

Parameter Unit		Cell 1	Cell 2
		T1	T1
E-UTRA RF Channel		1	2
Number			
BW _{channel}	MHz	5: $N_{RB,c} = 25$	5: $N_{RB,c} = 25$
		10: $N_{RB,c} = 50$	10: $N_{RB,c} = 50$
		20: $N_{RB,c} = 100$	20: $N_{RB,c} = 100$
Correlation Matrix and		1x2 Low	1x2 Low
Antenna Configuration			
PDSCH parameters		5MHz: R.7 FDD	-
		10MHz: R.3 FDD	
		20MHz: R.6 FDD	
PCFICH/PDCCH/PHIC		5MHz: R.11 FDD	5MHz: R.11 FDD
H parameters		10MHz: R.6 FDD	10MHz: R.6 FDD
		20MHz: R.10 FDD	20MHz: R.10 FDD
OCNG Patterns		5MHz: OP.20 FDD	5MHz: OP.16 FDD
defined in A.3.2.1.1		10MHz: OP.10 FDD	10MHz: OP.2 FDD
(OP.1 FDD)		20MHz: OP.17 FDD	20MHz: OP.12 FDD
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB	0	0
PHICH_RA	dB	0	0
PHICH_PB	dB		
PDCCH_RA	dB		
PDCCH_PB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA ^{Note 1}	dB		
OCNG_RB ^{Note 1}	dB		
$N_{oc}^{ m Note~3}$	dBm/15 KHz	-101	-101
\hat{E}_s/N_{oc}	dB	19	19
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	19	19
RSRP Note 4	dBm/15 KHz	-82	-82
SCH_RP Note 4	dBm/15 KHz	-82	-82
lo Note 3	dBm/Ch BW	-54.16+10log	-54.16+10log
		(N _{RB,c} /50)	(N _{RB,c} /50)
Propagation Condition		AWGN	AWGN
Antenna Configuration		1x2	1x2
Receive timing offset to Cell1 Note 5	μs	-	500

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission on PCell are assigned to the UE prior to the start of time period T1 to the end of T2. The resources for uplink transmission on PSCell are assigned to the UE prior to the start of time period T3 to the end of T4.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: Receive time difference between subframe boundaries of signals received from the two cells at the UE antenna connector including time alignment error between the two cells.

Table A.7.4.3.1-3: DRX-Configuration for E-UTRAN FDD-FDD Interruption at transitions between active and non-active during DRX in asynchronous dual connectivity

Field	PSCell	Comment
	Value	
onDurationTimer	psf1	
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf320	
shortDRX	disable	
Note: For further information see cla	use 6.3.2 in TS 36.331.	_

Table A.7.4.3.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN FDD-FDD Interruption at transitions between active and non-active during DRX in asynchronous dual connectivity

Field	PSCell	Comment
rield	Value	
TimeAlignmentTimer	sf500	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.7.4.3.2 Test Requirements

The UE shall be scheduled on PCell continuously during the whole time duration T1. During time durations T1, at least 99% of all expected ACK/NACKs shall be transmitted on PCell by the UE.

Each interruption shall not exceed 1 subframe.

The rate of correct events observed during repeated tests shall be at least 90%.

A.7.5 Proximity-based Services

A.7.5.1 E-UTRAN FDD – UE ProSe Direct Discovery Transmission Timing Accuracy Test

A.7.5.1.1 Test Purpose and Environment

The purpose of this test is to verify the timing requirements for ProSe Direct Discovery transmissions when PCell downlink timing is used as a reference with $N_{\rm TA,SL}=0$. This test will verify the requirements in clause 7.16.2.1.1.1 ProSe Direct Discovery transmissions. In the test the UE under test is configured for ProSe operation only on PCell and also the UE is configured only for PCell for WAN.

For this test, the UE is triggered by the test loop function or the upper layers to announce ProSe Direct Discovery.

The test parameters are given in Table A.7.5.1.1-1 below. There is one active cell (PCell) in this test. The transmit timing is verified using the transmission timing of PSDCH.

Table A.7.5.1.1-1: Test parameters for ProSe Transmission Timing Accuracy test for E-UTRAN FDD

Parameter	Unit	Value	Comment
E-UTRA RF Channel Number		1	
Channel Bandwidth (BW _{channel})	MHz	5	
Active cell		Cell 1	E-UTRA FDD Cell1 on RF channel number 1
CP length of Cell 1		Normal	
drx-Configuration		DRX_P1	As specified in Table A.3.12.2-
ProSe Direct Discovery resource pool configuration		As specified in Table A.3.12.4-1 (Configuration #1)	IE values unless specified otherwise in this test.
PDCCH/PCFICH/PHICH Reference measurement channel Note1		R.11 FDD	
OCNG Pattern ^{Note2}		OP.16 FDD	
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB OCNG_RA ^{Note3} OCNG_RB ^{Note3}	dB	0	
N_{oc}	dBm/15 kHz	-98	
\hat{E}_{s}/N_{oc}	dB	3	
RSRP Note4	dBm/15 kHz	-95	
SCH_RP Note 4	dBm/15 kHz	-95	
Propagation condition		AWGN	

Note 1: For the reference measurement channels, see clause A.3.1.

Note 2: For the OCNG pattern, see clause A.3.2.

Note 3: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.7.5.1.2 Test Requirements

For parameters specified in Tables A.7.5.1.1-1, the timing accuracy for ProSe Direct Discovery transmissions shall be within the limits defined in clause 7.16.2.

The following sequence of events shall be used to verify that the requirements are met.

For the 5MHz channel bandwidth, the test sequence shall be carried out in RRC_CONNECTED DRX with a cycle length of 320ms:

- a) After a connection is set up with the cell, the test system shall verify that the ProSe UE transmit timing offset is within $\pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- b) The test system adjusts the downlink transmit timing for the cell by $+32\times T_S$ (approximately $+1\mu s$) compared to that in (a). The test system shall wait for at least one discovery period (320ms) before verifying the requirement again in (c).
- c) The test system shall verify that the UE transmit timing offset stays within \pm 12×T_S with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.

A.7.5.2 E-UTRAN TDD – UE ProSe Direct Discovery Transmission Timing Accuracy Test

A.7.5.2.1 Test Purpose and Environment

The purpose of this test is to verify the timing requirements for ProSe Direct Discovery transmissions when PCell downlink timing is used as a reference with $N_{\rm TA,SL}=0$. This test will verify the requirements in clause 7.16.2.1.1.1 for ProSe Direct Discovery transmissions. In the test the UE under test is configured for ProSe operation only on PCell and also the UE is configured only for PCell for WAN.

For this test, the UE is triggered by the test loop function or the upper layers to announce ProSe Direct Discovery.

The test parameters are given in Table A.7.5.2.1-1 below. There is one active cell (PCell) in this test. The transmit timing is verified using the transmission timing of PSDCH.

Table A.7.5.2.1-1: Test parameters for ProSe Transmission Timing Accuracy test for E-UTRAN TDD

Parameter	Unit	Value	Comment
E-UTRA RF Channel Number		1	
Channel Bandwidth (BW _{channel})	MHz	5	
Active cell		Cell 1	E-UTRA FDD Cell1 on RF channel number 1
Uplink/Downlink Configuration		Config 0	
Special Subframe Configuration		6	
CP length of Cell 1		Normal	
drx-Configuration		DRX_P1	As specified in Table A.3.12.2-
ProSe Direct Discovery resource pool configuration		As specified in Table A.3.12.4-3 (Configuration #3)	IE values unless specified otherwise in this test.
PDCCH/PCFICH/PHICH Reference measurement channel Note1		R.11 TDD	
OCNG Pattern ^{Note2}		OP.10 TDD	
PBCH_RA			
PBCH_RB			
PSS_RA			
SSS_RA			
PCFICH_RB			
PHICH_RA	dB	0	
PHICH_RB			
PDCCH_RA			
PDCCH_RB			
OCNG_RA ^{Note3}			
OCNG_RB ^{Note3}			
N_{oc}	dBm/15 kHz	-98	
\hat{E}_{s}/N_{oc}	dB	3	
RSRP Note4	dBm/15 kHz	-95	
SCH_RP Note 4	dBm/15 kHz	-95	
Propagation condition		AWGN	

Note 1: For the reference measurement channels, see clause A.3.1.

Note 2: For the OCNG pattern, see clause A.3.2.

Note 3: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.7.5.1.2 Test Requirements

For parameters specified in Tables A.7.5.2.1-1, the timing accuracy for ProSe Direct Discovery transmissions shall be within the limits defined in clause 7.16.2.

The following sequence of events shall be used to verify that the requirements are met.

For the 5MHz channel bandwidth, the test sequence shall be carried out in RRC_CONNECTED DRX with a cycle length of 320ms:

- a) After a connection is set up with the cell, the test system shall verify that the ProSe UE transmit timing offset is within $624 \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- b) The test system adjusts the downlink transmit timing for the cell by $+32 \times T_S$ (approximately $+1 \mu s$) compared to that in (a). The test system shall wait for at least one discovery period (320ms) before verifying the requirement again in (c).
- c) The test system shall verify that the UE transmit timing offset stays within $624 \times T_S \pm 12 \times T_S$ with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.

A.7.5.3 E-UTRAN FDD - Interruptions due to ProSe Direct Discovery

A.7.5.3.1 Test Purpose and Environment

The purpose of this test is to verify the requirements related to the allowed PCell interruptions due to ProSe Direct Discovery defined in clause 7.16.3.1 and clause 7.16.3.3. In the test the UE under test is configured for ProSe operation only on PCell and also the UE is configured only for PCell for WAN.

For this test, the UE is triggered by the test loop function or the upper layers to monitor ProSe Direct Discovery.

The test parameters are given in Table A.7.5.3.1-1 and Table A.7.5.3.1-2 below. There is one active cell (PCell) in this test and 24 active Sidelink transmissions in this test (with 12 active Sidelink UEs per configured discovery subframe). Two tests (Test 1 and Test 2) are defined to verify interruptions due to synchronous (Test 1) and asynchronous (Test 2) ProSe Direct Discovery.

The tests consist of three successive time periods, with time duration of T1, T2 and T3 respectively.

During T1, the UE is in RRC_IDLE and monitoring the ProSe Direct Discovery announcements from other active Sidelink UEs on the ProSe Direct Discovery resources.

During T2, the test system establishes a RRC connection with the UE. No PDSCH traffic is scheduled for UE during T2, and the UE is expected to transmit *SidelinkUEInformation* indicating *discRxInterest* during T2. On reception of *SidelinkUEInformation*, the test system shall RRC reconfiguration message to the UE and wait for the UE to respond with RRC reconfiguration complete message before transitioning to T3. If the UE does not transmit *SidelinkUEInformation* for up to [2] sec, the test system shall transition to T3.

During T3, the UE is scheduled with PDSCH traffic on PCell downlink. The test system will count the missed ACK/NACKs during T3 to verify the allowed interruptions during ProSe Direct Discovery.

Table A.7.5.3.1-1: Test parameters for interruption due to ProSe Direct Discovery tests

Parameter	Unit	Val	lue	Comment
Faranietei	Onit	Test 1	Test 2	Comment
E-UTRA RF Channel Number		1		
Channel Bandwidth (BW _{channel})	MHz	63	5	
Active cell		Cell 1		E-UTRA FDD Cell1 on RF channel number 1
CP length of Cell 1		Nor		
T1	S	5.12		
T2	S	Up to receiving RRC reconfiguration setup complete from the UE, or up to [2] sec if UE does not transmit SidelinkUEInformation during this period.		
Т3	S	10.24		

Table A.7.5.3.1-2: ProSe Direct Discovery configuration for interruption due to ProSe Direct Discovery tests

Parameter Uni		Val	Commont	
Parameter	Unit	Test 1	Test 2	Comment
E-UTRA RF Channel Number		1		UL carrier frequency
Channel Bandwidth	MHz	5		
(BW _{channel})	IVII IZ	5		
ProSe Direct Discovery		As specified in Table	As specified in Table	IE values unless
resource pool configuration		A.3.12.4-1	A.3.12.4-2	specified otherwise
		(Configuration #1)	(Configuration #2)	in this test.
Antivo Cidalink III.		PDP.1.FDD	PDP.2.FDD	Transmitting ProSe
Active Sidelink UEs Configuration		As specified in Table	As specified in Table	Direct Discovery (Test 1 and 2) and
Configuration		A.3.12.8.2-1	A.3.12.8.2-1	SLSS (for Test 2)

Table A.7.5.3.1-3: Cell specific test parameters for interruption due to ProSe Direct Discovery tests

Parameter		Unit	Cell 1			
		Unit	T1	T2	T3	
E-UTRA RF Channel Number				1		
BW _{channel}		MHz		5		
UE RRC state			IDLE	CONN	IECTED	
Paging configuration	defaultPagingCycle nB		rf256 T / 32	-	√A	
DRX			N/A	С)FF	
PDSCH Reference mea defined in A.3.1.1.1 Note1	asurement channel		N/A	None	R.5 FDD	
PDCCH/PCFICH/PHICI	H Reference defined in A.3.1.2.1 ^{Note1}			R.11 FDD		
OCNG Pattern				OP.16 FDD		
PBCH_RA						
PBCH_RB						
PSS_RA						
SSS_RA						
PCFICH_RB						
PHICH_RA						
PHICH_RB		dB	0			
PDCCH_RA						
PDCCH_RB						
PDSCH_RA						
PDSCH_RB						
OCNG_RA ^{Note 1}						
OCNG_RB ^{Note 1}						
$N_{_{OC}}$ Note2		dBm/15 kHz	16			
\hat{E}_s/N_{oc}		dB				
RSRP Note3		dBm/15 kHz				
SCH_RP Note 3		dBm/15 kHz		-82		
Propagation Condition				AWGN		
density is acl	be used such that cell is fon hieved for all OFDM symb from other cells and noise	ols.				

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.7.5.3.2 Test Requirements

The UE shall be scheduled on PCell continuously during T3.

In Test 1, at least 98.75% of all expected ACK/NACKs during T3 shall be transmitted by the ProSe UE. The missed ACK/NACKs can occur only on subframe 'n', if either n±1 subframe is a discovery subframe, or if n-3, or n-5 is a discovery subframe.

NOTE: For the test configuration in Table A.7.5.3.1-1 and Table A.7.5.3.1-2, the specific subframes where missed ACK/NACKs are allowed are when (subframe mod 320) = 159, 163, 162, 166, corresponding to allowed interruptions on subframe 159 and 162.

In Test 2, at least 97.5% of all expected ACK/NACKs during T3 shall be transmitted by the ProSe UE. The missed ACK/NACK can occur only on subframe 'n', if either n±5 subframe is a discovery or SLSS subframe, or if n+1, or n-9 is a discovery or SLSS subframe.

NOTE: For the test configuration in Table A.7.5.3.1-1 and Table A.7.5.3.1-2, the specific subframes where missed ACK/NACKs are allowed are when (subframe mod 320) = 135, 139, 145, 149, 155, 159, 166, 170, corresponding to allowed interruptions on subframes 135, 145, 155 and 166.

A.7.5.4 E-UTRAN FDD – UE ProSe Direct Communication Transmission Timing Accuracy Test

A.7.5.4.1 Test Purpose and Environment

The purpose of this test is to verify the timing requirements for ProSe Direct Communication transmissions when PCell downlink timing is used as a reference with $N_{\rm TA,SL}=0$. This test will verify the requirements in clause 7.16.2.1.1.1 for ProSe Direct Communication transmissions. In the test the UE under test is configured for ProSe operation only on PCell and also the UE is configured only for PCell for WAN.

For this test, the UE is triggered by the test loop function or the upper layers to transmit for ProSe Direct Communication.

The test parameters are given in Table A.7.5.4.1-1 below. There is one active cell (PCell) in this test. The test system will configure the ProSe UE to transmit SLSS in each period (40ms) by configuring *networkControlledSyncTx* as ON via dedicated RRC signaling. The transmit timing is verified using the transmission timing of SLSS transmissions.

Table A.7.5.4.1-1: Test parameters for ProSe Transmission Timig Accuracy test for E-UTRAN FDD

Parameter	Unit	Value	Comment
E-UTRA RF Channel Number		1	
Channel Bandwidth (BW _{channel})	MHz	5 or 10	Note 5
Active cell		Cell 1	E-UTRA FDD Cell1 on RF channel number 1
CP length of Cell 1		Normal	
drx-Configuration		DRX_P1	As specified in Table A.3.12.2-1
ProSe Direct Communication configuration		As specified in Table A.3.12.5-1 (Configuration #1)	IE values unless specified otherwise in this test.
networkControlledSyncTx		ON	Configured
PDCCH/PCFICH/PHICH Reference measurement channel ^{Note1}		5 MHz: R.11 FDD 10 MHz: R.6 FDD	
OCNG Pattern ^{Note2}		5 MHz: OP.16 FDD 10 MHz: OP.2 FDD	
PBCH_RA			
PBCH_RB			
PSS_RA			
SSS_RA			
PCFICH_RB			
PHICH_RA	dB	0	
PHICH_RB			
PDCCH_RA			
PDCCH_RB			
OCNG_RA ^{Note3}			
OCNG_RB ^{Note3}			
N_{oc}	dBm/15 kHz	-98	
\hat{E}_{s}/N_{oc}	dB	3	
RSRP Note4	dBm/15 kHz	-95	
SCH_RP Note 4	dBm/15 kHz	-95	
Propagation condition		AWGN	

Note 1: For the reference measurement channels, see clause A.3.1.

Note 2: For the OCNG pattern, see clause A.3.2.

Note 3: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: This test is according to the principle defined in section A.3.12.3.

A.7.5.4.2 Test Requirements

For parameters specified in Tables A.7.5.4.1-1, the timing accuracy for ProSe Direct Communication transmissions shall be within the limits defined in clause 7.16.2. The timing accuracy is verified using SLSS transmissions.

The following sequence of events shall be used to verify that the requirements are met.

For 5MHz or 10MHz channel bandwith, the test sequence shall be carried out in RRC_CONNECTED DRX with a cycle length of 320ms:

- a) After a connection is set up with the cell, the test system shall verify that the ProSe UE SLSS transmission timing offset is within \pm 12×T_S with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.
- b) The test system adjusts the downlink transmit timing for the cell by +32×T_S (approximately +1μs) compared to that in (a). The test system shall wait for at least one SLSS period (40ms) before verifying the requirement again in (c).
- c) The test system shall verify that the UE SLSS transmissiontiming offset stays within \pm 12×T_S with respect to the first detected path (in time) of the corresponding downlink frame of cell 1.

A.7.5.5 E-UTRAN FDD - Interruptions due to ProSe Direct Communication

A.7.5.5.1 Test Purpose and Environment

The purpose of this test is to verify the requirements related to PCell interruptions due to ProSe Direct Communication defined in clause 7.16.3. In the test the UE under test is configured for ProSe operation only on PCell and also the UE is configured only for PCell for WAN.

For this test, the UE is triggered by the test loop function or the upper layers to monitor ProSe Direct Communication.

The test parameters are given in Table A.7.5.5.1-1, Table A.7.5.5.1-2 and Table A.7.5.5.1-3 below. There is one active cell (PCell) in this test and 12 (5MHz) or 16 (10 MHz) active Sidelink UEs in this test transmitting ProSe Direct Communication.

The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively.

During T1, the UE is in RRC_IDLE and monitoring the ProSe Direct Communication transmission from other active Sidelink UEs on the ProSe Direct Communication resoruces.

During T2, the test system establishes a RRC connection with the UE. No PDSCH traffic is scheduled for UE during T2, and the UE is expected to transmit *SidelinkUEInformation* indicating *commRxInterestedFreq* during T2. On reception of *SidelinkUEInformation*, the test system shall RRC reconfiguration message to the UE and wait for the UE to repond with RRC reconfiguration complete message before transitioning to T3. If the UE does not transmit *SidelinkUEInformation* for up to [2] sec, the test system shall transition to T3.

During T3, the UE is scheduled with PDSCH traffic on PCell downlink. The test system will count the missed ACK/NACKs during T3 to verify the allowed interruptions during ProSe Direct Communication (no missed ACK/NACKs are allowed).

Table A.7.5.5.1-1: Test parameters for interruption due to ProSe Direct Communication tests

Parameter	Unit	Value	Comment	
E-UTRA RF Channel Number		1		
Channel Bandwidth (BW _{channel})	MHz	5 or 10	According to principle defined in clause A.3.12.3	
Active cell		Cell 1	E-UTRA FDD Cell1 on RF channel number 1	
CP length of Cell 1		Normal		
T1	S	5.12		
T2	s	Up to receiving RRC reconfiguration setup complete from the UE, or up to [2] sec if UE does not transmit SidelinkUEInformation during this period.		
Т3	S	10.24		
Note 1: This test is according to the principle defined in section A.3.12.3.				

Table A.7.5.5.1-2: ProSe Direct Communication specific configuration for interruption due to ProSe Direct Communication tests

Parameter	Unit	Value	Comment	
E-UTRA RF Channel Number		1	UL carrier frequency	
Channel Bandwidth (BW _{channel})	MHz	5 or 10	According to principle defined in clause A.3.12.3	
ProSe Direct Communication configuration		As specified in Table A.3.12.5-1 (Configuration #1)	IE values unless specified otherwise in this test.	
Active Sidelink UEs Configuration Note 1		PCP.1.FDD As specified in Table A.3.12.8.1-1	Transmitting ProSe Direct Communication (PSCCH + PSSCH)	
Note 1: This test is according to the principle defined in section A.3.12.3.				

Table A.7.5.5.1-2: Cell specific test parameters for interruption due to ProSe Direct Communication tests

Parameter		Unit	Cell 1		
		Offic	T1	T2	T3
	E-UTRA RF Channel Number			1	
BW _{channel} Note 4		MHz	5 or 10		
UE RRC state			IDLE	IDLE CONNECTED	
Paging configuration	defaultPagingCycle		rf256	N	/A
raging configuration	nB		T / 32	IN	/A
DRX			N/A	0	FF
PDSCH Reference measurement channel defined in A.3.1.1.1 Note 1, Note 4			N/A	None	R.7 FDD (5MHz) or R.3 FDD (10MHz) (Note 5 applies)
PDCCH/PCFICH/PHIC	H Reference			5 MHz: R.11 FD	D
measurement channel o	defined in A.3.1.2.1 Note1,			10 MHz: R.6 FD	
OCNG Pattern Note 4			1	5 MHz: OP.16 0 MHz: OP.2 FD)D
PBCH_RA					
PBCH_RB					
PSS_RA					
SSS_RA					
PCFICH_RB					
PHICH_RA					
PHICH_RB		dB		0	
PDCCH_RA					
PDCCH_RB					
PDSCH_RA					
PDSCH_RB					
OCNG_RA ^{Note 1}					
OCNG_RB ^{Note 1}					
N_{oc} Note2		dBm/15 kHz		-98	
\hat{E}_s/N_{oc}		dB		16	
RSRP Note3		dBm/15 kHz		-82	
SCH_RP Note 3		dBm/15 kHz	-82		
Propagation Condition				AWGN	
Note 1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over					
subcarriers a	subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.				
Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Note 4: This test is according to the principle defined in section A.3.12.3. Note 5: The PDSCH scheduled subframes for R.7 FDD (5MHz) / R.3 FDD (10MHz) is changed as per the				not settable	
following bitmap that repeats every 40ms. PDSCH scheduled subframe bitmap: {01110111 11110111 11110111 11110110}.				•	

A.7.5.5.2 Test Requirements

The UE shall be scheduled on PCell continuously during T3. During T3, 100% of all expected ACK/NACKs shall be transmitted by the ProSe UE.

A.8 UE Measurements Procedures

The reference channels in this clause assume transmission of PDSCH with a maximum number of 5 HARQ transmissions unless otherwise specified.

A.8.1 E-UTRAN FDD Intra-frequency Measurements

A.8.1.1 E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells

A.8.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the FDD intra-frequency cell search requirements in clause 8.1.2.2.1.1.

The test parameters are given in Table A.8.1.1.1-1 and A.8.1.1.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.1.1.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.1
parameters		Channel R.6 FDD	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	One FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10	
A3-Offset	dB	-6	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX			OFF
Time offset between cells		3 ms	Asynchronous cells
T1	S	5	
T2	S	5	

Table A.8.1.1.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells

Parameter	Unit	Cell 1		Cell 2		
		T1 T2		T1	T2	
E-UTRA RF Channel		1			1	
Number						
BW _{channel}	MHz	•	10		10	
Correlation Matrix and		1x2	Low	1	x2 Low	
Antenna Configuration						
OCNG Patterns						
defined in A.3.2.1.1		OP.1	I FDD	OI	P.2 FDD	
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB		_			
PHICH_RA	dB	0		0		
PHICH_PB	dB					
PDCCH_RA	dB					
PDCCH_PB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
\hat{E}_{s}/I_{ot}	dB	4	-1.46	-Infinity	-1.46	
$N_{oc}^{ m Note~3}$	dBm/15 KHz	-98				
\hat{E}_s/N_{oc}	dB	4 4		-Infinity	4	
RSRP Note 4	dBm/15 KHz	-94	-94	-Infinity	-94	
SCH_RP Note 4	dBm/15 KHz	-94 -94		-Infinity	-94	
Propagation Condition		ETU70				

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.1.1.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 800 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

A.8.1.2 E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

A.8.1.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the FDD intra-frequency cell search requirements in clause 8.1.2.2.1.1

The test parameters are given in Table A.8.1.2.1-1 and A.8.1.2.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. PDCCHs indicating new transmissions or retransmissions shall be sent continuously to ensure that the UE would not enter the DRX state. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.1.2.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.1
parameters		Channel R.6 FDD	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	One FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10	
A3-Offset	dB	-6	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		DRX_L	As specified in clause A.3.3
Time offset between cells		3 μs	Synchronous cells
T1	S	5	
T2	s	5	

Table A.8.1.2.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Cell 1 T1 T2		Cell 2		
				T1	T2	
E-UTRA RF Channel		1			1	
Number						
BW _{channel}	MHz	1	0		10	
Correlation Matrix and		1x2	Low	12	1x2 Low	
Antenna Configuration						
OCNG Patterns						
defined in A.3.2.1.1		OP.1	FDD	OF	P.2 FDD	
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB			0		
PCFICH_RB	dB		_			
PHICH_RA	dB	(0			
PHICH_RB	dB					
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	-1.46	-Infinity	-1.46	
$N_{oc}^{ m Note~3}$	dBm/15 KHz	-98			•	
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4	
RSRP Note 4	dBm/15 KHz	-94 -94		-Infinity	-94	
SCH_RP Note 4	dBm/15 KHz	-94	-94	-Infinity	-94	
Propagation Condition		ETU70				

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.1.2.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 800 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.1.3 E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells with DRX

A.8.1.3.1 Test Purpose and Environment

The purpose of the two tests is to verify that the UE makes correct reporting of an event in DRX. The tests will partly verify the FDD-FDD intra-frequency cell search in DRX requirements in clause 8.1.2.2.1.2.

The test parameters are given in Tables A.8.1.3.1-1, A.8.1.3.1-2, A.8.1.3.1-3 and A.8.1.3.1-4. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

Table A.8.1.3.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Parameter	Unit	Value		Comment
		Test 1 Test 2		
PDSCH parameters		DL Reference Measurement		As specified in clause A.3.1.1.1
		Channel R.0 FDD)	
PCFICH/PDCCH/PHICH		DL Reference Me	asurement	As specified in clause A.3.1.2.1
parameters		Channel R.6 FDD)	
Active cell		Cell 1		
Neighbour cell		Ce	II 2	Cell to be identified.
E-UTRA RF Channel		1		One FDD carrier frequency is used.
Number				
Channel Bandwidth	MHz	10		
(BW _{channel})				
A3-Offset	dB	-6		
CP length		Normal		
Hysteresis	dB	0		
Time To Trigger	S	0		
Filter coefficient		0		L3 filtering is not used
DRX		ON		DRX related parameters are defined in
				Table A.8.1.3.1-3
Time offset between cells		3 μs		Synchronous cells
T1	S	5		
T2	S	5 30		

Table A.8.1.3.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Parameter	Unit	Cell 1 T1 T2		Cell 2		
				T1	T2	
E-UTRA RF Channel		1			1	
Number						
BW _{channel}	MHz		10		10	
Correlation Matrix and		1x2	. Low	1)	1x2 Low	
Antenna Configuration						
OCNG Patterns						
defined in A.3.2.1.1		OP.	1 FDD	OF	P.2 FDD	
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB		•			
PHICH_RA	dB	0		0		
PHICH_RB	dB					
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	-1.46	-Infinity	-1.46	
$N_{oc}^{ m Note~2}$	dBm/15 KHz	-98			•	
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4	
RSRP Note 3	dBm/15 KHz	-94	-94	-Infinity	-94	
SCH_RP Note 3	dBm/15 KHz	-94	-94	-Infinity	-94	
Propagation Condition		ETU70				

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Table A.8.1.3.1-3: DRX-Configuration for E-UTRAN FDD-FDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Test1	Test2	Comment
rieiu	Value	Value	
onDurationTimer	psf1	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	psf1	36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.1.3.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN FDD-FDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Test1	Test2	Comment
Field	Value	Value	
TimeAlignmentTimer	sf500	sf500	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.1.3.2 Test Requirements

In Test 1, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 800 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE send the measurement report on PUSCH.

In Test 2, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 25600 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement

reporting procedure to the next until the Active Time.

NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

A.8.1.4 Void

A.8.1.5 E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

A.8.1.5.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in clause 8.1.2.2.3.

The test scenario comprises of one E-UTRA FDD carrier and two cells as given in tables A.8.1.5.1-1 and A.8.1.5.1-2. PDCCHs indicating new transmissions shall be sent continuously to ensure that the UE would have ACK/NACK sending during identifying a new CGI of E-UTRAN cell. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE.

Table A.8.1.5.1-1: General test parameters for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.3 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	Only one FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10	
CP length		Normal	
A3-Offset	dB	-3	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
si-RequestForHO		TRUE	As specified in clause 5.5.3.1 in TS 36.331.
Time offset between cells	ms	3	Asynchronous cells
T1	S	5	
T2	S	≤10	
T3	s	5	

Table A.8.1.5.1-2: Cell specific test parameters for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns defined in		OP.10	OP.10	OP.10	OP.2	OP.2	OP.2
A.3.2.1.10 (OP.10 FDD)		FDD	FDD	FDD	FDD	FDD	FDD
and in A.3.2.1.2 (OP.2							
FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB		_			_	
PHICH_RA	dB		0			0	
PHICH_PB	dB						
PDCCH_RA	dB						
PDCCH_PB	dB						
PDSCH_RA	dB	1					
PDSCH_RB	dB	1					
OCNG_RA ^{Note 1}	dB	1					
OCNG_RB ^{Note 1}	dB						

$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	8	-3.3	-3.3	-Infinity	2.36	2.36
$N_{oc}^{ m Note 2}$	dBm/15 KHz	-98					
\hat{E}_s/N_{oc}	dB	8	8	8	-Infinity	11	11
RSRP Note 3	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87
SCH_RP Note3	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87
Propagation Condition		AWGN					

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.1.5.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

Test requirement = RRC Procedure delay + $T_{identify CGI, intra}$ + reporting delay

- = 15 + 150 + 2ms from the start of T3
- = 167 ms, allow 170 ms.

The UE shall be scheduled continuously throughout the test, and from the start of T3 until 170 ms at least 80 ACK/NACK shall be detected as being transmitted by the UE.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The overall 80 ACK/NACK number is caused by two parts. Firstly, at least 60 ACK/NACK shall be sent during identifying the cell global identifier of cell 2 according to the requirement in Clause 8.1.2.2.3.1.

Secondly, given that continuous DL data allocation, additional 20 ACK/NACK shall be sent from the start of T3 until 170 ms excludes 150 ms for identifying the cell global identifier of cell 2.

A.8.1.6 E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

A.8.1.6.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in clause 8.1.2.2.3. The requirement is verified in a DRX configuration.

The test scenario comprises of one E-UTRA FDD carrier and two cells as given in tables A.8.1.6.1-1, A.8.1.6.1-2, A.8.1.6.1-3 and A.8.1.6.1-4. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE.

In the test UE needs to be provided at least once every 1280ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE sends scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

Table A.8.1.6.1-1: General test parameters for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	Only one FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10	
CP length		Normal	
A3-Offset	dB	-3	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		ON	DRX related parameters are defined in Table A.8.1.6.1-3
si-RequestForHO		TRUE	As specified in clause 5.5.3.1 in TS 36.331.
Time offset between cells	ms	3	Asynchronous cells
T1	S	5	
T2	S	≤30	UE shall report cell within 25.6s (20 DRX cycles)
T3	s	5	

Table A.8.1.6.1-2: Cell specific test parameters for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns defined in		OP.1	OP.1	OP.1	OP.2	OP.2	OP.2
A.3.2.1.1 (OP.1 FDD) and		FDD	FDD	FDD	FDD	FDD	FDD
in A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		0			0	
PHICH_PB	dB						
PDCCH_RA	dB						
PDCCH_PB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB	1					
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB]					

\hat{E}_{s}/I_{ot}	dB	8	-3.3	-3.3	-Infinity	2.36	2.36
N_{oc} Note 2	dBm/15 KHz	-98					
\hat{E}_s/N_{oc}	dB	8	8	8	-Infinity	11	11
RSRP Note 3	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87
SCH_RP Note3	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87
Propagation Condition		AWGN					

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.1.6.1-3: DRX configuration for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Field	Value	Comment
onDurationTimer	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table A.8.1.6.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Field	Value	Comment
TimeAlignmentTimer	Infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.1.6.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

 $Test\ requirement\ = RRC\ Procedure\ delay\ +\ T_{identify_CGI,intra}\ +\ reporting\ delay$

= 15 + 150 + 2ms from the start of T3

= 167 ms, allow 170 ms.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.1.7 E-UTRAN FDD-FDD Intra-Frequency Event-Triggered Reporting under Time Domain Measurement Resource Restriction with Non-MBSFN ABS

A.8.1.7.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects and reports Event A3 (Neighbour becomes offset better than PCell) defined in TS 36.331 [2] within the requirements specified in Clause 8.1.2.8.1.1 under a time domain measurement resource restriction and non-MBSFN ABS configured in the aggressor cell.

The test parameters are given in Tables A.8.1.7.1-1 and A.8.1.7.1-2 below. It is indicated to the UE in the measurement control information that event-triggered reporting with Event A3 is used. In the test there are two synchronous cells, Cell 1 and Cell 2, on the same RF channel. Cell 1 is the PCell, and it is also the aggressor cell to Cell 2. Cell 2 is the cell to be identified. The test consists of two successive time periods with time duration of T1 and T2, respectively. During time duration T1, the UE shall not have any timing information on Cell 2.

Non-MBSFN ABS pattern is configured for Cell 1 during the test. The UE is configured by higher layers via Cell 1 with a time domain measurement resource restriction pattern for performing E-UTRAN FDD intra-frequency measurements on neighbour cells. The UE is also configured with a time domain measurement resource restriction pattern for the PCell measurements. The information for both measurement patterns shall be provided to the UE via higher layers during T1.

Table A.8.1.7.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under time domain measurement resource restriction with non-MBSFN ABS

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference	As specified in clause A.3.1.1.1
·		Measurement Channel	·
		R.0 FDD	
PCFICH/PDCCH/PHICH		DL Reference	As specified in clause A.3.1.2.1
parameters		Measurement Channel	
		R.6 FDD	
PCell		Cell 1	Also the aggressor cell. Active in T1 and T2
Neighbour cell		Cell 2	Cell to be identified. Active only in T2.
PCell ABS configuration		Non-MBSFN ABS	As defined in Table A.3.4.1.1-1
E-UTRA RF Channel Number		1	One FDD carrier frequency is used
Channel Bandwidth (BW _{channel})	MHz	10	For all cells in the test
A3-Offset	dB	-11	
Event A3 measurement quantity		RSRP	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX			OFF
Time offset between cells		3 μs	Synchronous cells
T1	S	5	
T2	S	5	
Physical cell ID PCI		(PCI _{cell1} - PCI _{cell2})mod6	Cell PCIs are selected so that the condition is
		!=0	met
ABS pattern			FDD ABS Pattern Info IE, as defined in TS
		100000010000001000	36.423 [28], clause 9.2.54. Configured in Cell 1
		00001000000010000000	during T1.
			The first/leftmost bit corresponds to the
			subframe #0 of the radio frame satisfying SFN
			mod $x = 0$, where x is the size of the bit string
			(40) divided by 10. No MBSFN subframes are
Time demain massurement			cofigured in the ABS subframes. Time domain measurement resource restriction
Time domain measurement		1000000010000001000	
resource restriction pattern for neighbour cell measurements on		'1000000010000001000 00001000000010000000	pattern for neighbor cell measurement signalled to the UE in measSubframePattern-Neigh IE in
RF Channel 1			measSubframePatternConfig-Neigh, as defined
TO CHAINE I			in TS 36.331, clause 6.3.5.
			Configured during T1 for Cell 2 measurements.
Time domain measurement		'0100000010000000100	Configured during T1 for Cell 1 measurements
resource restriction pattern for		00000100000001000000	
PCell measurements			

Table A.8.1.7.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under time domain measurement resource restriction with non-MBSFN ABS

Parameter	Unit	Ce	Cell 1		Cell 2		
		T1	T2	T1	T2		
E-UTRA RF Channel					1		
Number							
BW _{channel}	MHz	1	0		10		
Correlation Matrix and		1x2	Low	1)	k2 Low		
Antenna Configuration							
OCNG Patterns							
defined in A.3.2.1.5		OP.5	FDD	OF	P.6 FDD		
(OP.5 FDD) and in							
A.3.2.1.6 (OP.6 FDD)							
PBCH_RA	dB		ABS subframe				
PBCH_RB	dB		ers defined in				
PSS_RA	dB	Table A.:	3.4.1.1-1.				
SSS_RA	dB	_					
PCFICH_RB	dB			0			
PHICH_RA	dB						
PHICH_RB	dB	_					
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$N_{oc}^{ m Note~3}$	dBm/15 kHz		-	98			
$(\hat{E}_s / N_{oc})_{meas}^{$	dB	1	1	-Infinity	-4		
(\hat{E}_s/N_{oc})ABS	dB	1	1	N/A	N/A		
RSRP Note 4,5	dBm/15 kHz	-97	-97	-Infinity	-102		
SCH_RP Note 4	dBm/15 kHz	-97	-97	-Infinity	-102		
CRS $\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	1	-0.5	-Infinity	-4		
SCH $\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	1	-0.5	-Infinity	-7.5		
Propagation Condition			ET	U30			
	e used such tha	t both cells are f	ully allocated an	d a constant to	tal transmitted		

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled. Applies to all subframes.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: RSPP is estimated for Cell 2 during the restricted measurement subframes for neighbour cells. RSPP is estimated for Cell 1 during the PCell restricted subframes.

A.8.1.7.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for Cell 2, with a measurement reporting delay less than 1000 ms from the beginning of time period T2.

The UE shall not send event-triggered measurement reports as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90% for the tested Event A3.

NOTE: The actual overall delays measured in the tests may be up to $2 \times TTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.1.8 E-UTRAN FDD-FDD Intra-Frequency Event-Triggered Reporting under Time Domain Measurement Resource Restriction with CRS Assistance Information and Non-MBSFN ABS

A.8.1.8.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects and reports Event A3 (neighbour becomes offset better than PCell) defined in TS 36.331 [2] within the requirements specified in Clause 8.1.2.8.3, when the UE is provided with a time-domain measurement resource restriction pattern and CRS assistance information, and when non-MBSFN ABS configured in the interfering cells.

The test parameters are given in Tables A.8.1.8.1-1 and A.8.1.8.1-2 below. It is indicated to the UE in the measurement control information that event-triggered reporting with Event A3 is used. In the test, there are three synchronous cells, Cell 1, Cell 2, and Cell 3, on the same RF channel. Cell 1 is the PCell. Cell 3 is the cell to be identified. A non-MBSFN ABS pattern is configured in each of the Cell 1 and Cell 2 during the entire test. The test consists of two successive time periods with time duration of T1 and T2, respectively. During time duration T1, the UE shall not have any timing information on Cell 3.

The UE is configured by higher layers with a time domain measurement resource restriction pattern for performing E-UTRAN FDD intra-frequency measurements on neighbour cells, nsamely Cell 3 measurements. The UE is also provided via higher layers with the CRS assistance information for Cell 2. The information for both measurement patterns and the CRS assistance information shall be provided via RRC to the UE during T1.

Table A.8.1.8.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under time domain measurement resource restriction with CRS assistance information and non-MBSFN ABS

Parameter		Unit	Value	Comment		
PDSCH parameters			DL Reference Measurement	As specified in clause A.3.1.1.1		
·			Channel R.0 FDD	•		
PCFICH/PDCCI parameters	H/PHICH		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1		
PCell	PCell		Cell 1	Also a first interfering cell to Cell 3. Active in T1 and T2.		
Neighbour cells			Cell 2 and Cell 3	Cell 2 is a second interfering cell; Cell 2 is active in T1 and T2. Cell 3 is the cell to be identified; Cell 3 is active only in T2.		
ABS transmission	on configuration		Non-MBSFN ABS	As defined in Table A.3.4.1.1-1		
E-UTRA RF Cha			1	One FDD carrier frequency is used		
Channel Bandw		MHz	10	For all cells in the test		
A3-Offset	(Grainier)	dB	-14			
Event A3 measu	urement quantity		RSRP			
CP length	-		Normal			
Hysteresis		dB	0			
Time To Trigger		S	0			
Filter coefficient			0	L3 filtering is not used		
DRX				OFF		
Time offset betv	veen cells	μs	Cell 2 offset with respect to Cell 1: 0 Cell 3 offset with respect to Cell 1: -2.5	Three synchronous cells		
T1		S	5			
T2		S	5			
	Physical cell IDs		(PCI _{cell1} - PCI _{cell3})mod6 = 0 (PCI _{cell2} - PCI _{cell3})mod6 != 0 PCI _{cell1} not equal to PCI _{cell3}	Cell PCIs are selected so that all conditions are met		
ABS pattern			'100000001000000100000 001000000010000000	FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. The first/leftmost bit corresponds to the Pcell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. No MBSFN subframes are configured in the ABS subframes. Configured in Cell 1 and Cell 2 during T1.		
Time domain measurement resource restriction pattern for neighbour cell measurements on RF Channel 1			'100000001000000100000 001000000010000000	Time domain measurement resource restriction pattern for neighbor cell measurement signalled to the UE in measSubframePatternNeigh IE in measSubframePatternConfigNeigh, as defined in TS 36.331, clause 6.3.5. Configured during T1 for Cell 3 measurements. The cell list in measSubframeCellList IE shall contain Cell 3 but not Cell 2.		
Time domain me resource restrict PCell measuren	tion pattern for		'010000000100000010000 000100000001000000	Configured during T1 for Cell 1 measurements		
physCellId			see PCI conditions above	The CRS assistance information is		
CRS assistance	antennaPortsC ount		1	provided for Cell 2 only in CRS- AssistanceInfo. It includes a single		
information	mbsfn- SubframeConfi gList		oneFrame = '000000'	MBSFN-SubframeConfig element with subframe allocation <i>one</i> Frame='000000'.		

Table A.8.1.8.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under time domain measurement resource restriction with CRS assistance information and non-MBSFN ABS

Downwater	I Imit	Cell 1		Се	II 2	Cell 3		
Parameter	Unit	T1	T2	T1	T2	T1	T2	
E-UTRA RF Channel		1			1	1		
Number		'			ı	l		
BW _{channel}	MHz	10	0	1	0	1	0	
Correlation Matrix and		1x2	Low	1v2	Low	1v2	Low	
Antenna Configuration		172	LOW	172	LOW	172	LOW	
OCNG Patterns defined in							OP.6	
A.3.2.1.5 (OP.5 FDD) and		OP.5	FDD	OP.6	FDD	N/A	FDD	
in A.3.2.1.6 (OP.6 FDD)							100	
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB	Non ADC	and ABC	Non-ABS and ABS				
PHICH_RA	dB	Non-ABS and ABS subframe channel powers defined in Table A.3.4.1.1-1.		subframe channel powers defined in Table A.3.4.1.1-1.		N/A 0		
PHICH_RB	dB						0	
PDCCH_RA	dB							
PDCCH_RB	dB	Table A.c). . . - .	Table A.S.4.1.1-1.				
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
N_{oc} Note 3	dBm/15				98			
¹ V oc	kHz				90			
(\hat{E}_s/N_{oc})	dB	4	4	2	2	-Infinity	-4	
RSRP Note 4	dBm/15 kHz	-94	-94	-96	-96	-Infinity	-102	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-96	-96	-Infinity	-102	
${\sf CRS}\hat{E}_{\sf s}/I_{\sf ot}^{\sf Note5}$	dB	4	2.54	2	0.54	-Infinity	-9.46	
SCH $\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	-0.12	-0.75	-3.45	-3.92	-Infinity	-11.07	
Propagation Condition		ETU	J30	ET	ETU30		ETU30	

NOTE 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

NOTE 3: Interference from other cells and noise sources not specified in the test is assumed to be constant.

over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{\it oc}$ to be fulfilled. Applies to all subframes.

NOTE 4: RSRP, SCH_RP, and \hat{E}_s/I_{ot} levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

NOTE 5: Applies during the restricted measurement subframes configured for neighbour cell (Cell 3) measurements.

A.8.1.8.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for Cell 3, with a measurement reporting delay less than 1000 ms from the beginning of time period T2.

The UE shall not send event-triggered measurement reports as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90% for the tested Event A3.

NOTE: The actual overall delays measured in the tests may be up to $2 \times TTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.1.9 E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells for 5MHz bandwidth

A.8.1.9.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.1.1.1.

The parameters of this test are the same as defined in Subclause A.8.1.1.1 except that the values of the parameters in the Table A.8.1.9.1-1 will replace the values of the corresponding parameters in A.8.1.1.1-1, and the values of the parameters in the Table A.8.1.9.1-2 will replace the values of the corresponding parameters in A.8.1.1.1-2.

Table A.8.1.9.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells for 5MHz bandwidth

Parameter	Unit	Value	Comment		
PDSCH parameters		DL Reference Measurement Channel R.5 FDD	As specified in clause A.3.1.1.1		
PCFICH/PDCCH/PHICH parameters			As specified in clause A.3.1.2.1		
Note 1: See Table A.8.1.1.1-1 for the other parameters. Note 2: This test is according to the principle defined in section A.3.7.2.					

Table A.8.1.9.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells for 5MHz

Parameter	Unit	Cell 1			Cell 2	
		T1	T2	T1	T2	
BW _{channel}	MHz	5	;	5		
OCNG Patterns						
defined in A.3.2.1.15						
(OP.15 FDD) and		OP.15 FDD		OP.16 FDD		
A.3.2.1.16 (OP.16						
FDD)						
	be used such that both cells are fully allocated and a constant total transmitted					
power spectra	ral density is achieved for all OFDM symbols.					
Note 2: See Table A.	8.1.1.1-2 for the	other parameters	S.			

A.8.1.9.2 Test Requirements

The test requirements defined in section A.8.1.1.2 shall apply to this test case.

A.8.1.10 E-UTRAN FDD-FDD Intra-Frequency Event Triggered Reporting under Fading Propagation Conditions in Synchronous Cells with DRX for 5 MHz Bandwidth

A.8.1.10.1 Test Purpose and Environment

The purpose of the two tests is to verify that the UE makes correct reporting of an event in DRX. The tests will partly verify the FDD-FDD intra-frequency cell search in DRX requirements in clause 8.1.2.2.1.2.

The parameters of this test are the same as defined in Section A.8.1.3.1 except that the values of the parameters in the Table A.8.1.10.1-1 will replace the values of the corresponding parameters in A.8.1.3.1-1, and the values of the parameters in the Table A.8.1.10.1-2 will replace the values of the corresponding parameters in A.8.1.3.1-2.

Table A.8.1.10.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Parameter	Unit	Value		Comment			
		Test 1	Test 2				
PDSCH parameters		DL Reference Measurement Channel R.5 FDD		As specified in clause A.3.1.1.1			
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.11 FDD		As specified in clause A.3.1.2.1			
Channel Bandwidth	MHz	5					
(BW _{channel})							
NOTE 1: See Table A.8.1.3.1-1 for the other parameters.							
NOTE 2: This test is according to the principle defined in Section A.3.7.2.							

Table A.8.1.10.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Parameter	Unit	Cell 1		(Cell 2		
		T1 T2		T1	T2		
BW _{channel}	MHz	5		5			
OCNG Patterns							
defined in A.3.2.1.15		OP.15 FDD		OP.	16 FDD		
(OP.15 FDD) and in							
A.3.2.1.16 (OP.16							
FDD)							
NOTE 1: See Table A.8	NOTE 1: See Table A.8.1.3.1-2 for the other parameters.						

A.8.1.10.2 Test Requirements

The test requirements defined in Section A.8.1.3 shall apply to this test case.

A.8.1.11 E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells for UE category 0

A.8.1.11.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the FDD intra-frequency cell search requirements in clause 8.5.2.1.1.

The test parameters are given in Table A.8.1.11.1-1 and A.8.1.11.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.1.11.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement	As specified in clause A.3.1.1.3
		Channel R.13 FDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.1
parameters		Channel R.6 FDD	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel		1	One FDD carrier frequency is used.
Number			
Channel Bandwidth	MHz	10	
(BW _{channel})			
A3-Offset	dB	-6	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX			OFF
Time offset between cells		3 ms	Asynchronous cells
T1	S	5	
T2	S	5	

Table A.8.1.11.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells

Parameter	Unit	Ce	ell 1		Cell 2	
		T1	T2	T1	T2	
E-UTRA RF Channel			1		1	
Number						
BW _{channel}	MHz		0		10	
Correlation Matrix and		2	x1		2x1	
Antenna Configuration						
OCNG Patterns						
defined in A.3.2.1.1		OP.1	FDD	OI	P.2 FDD	
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB	(0		0	
PHICH_PB	dB					
PDCCH_RA	dB					
PDCCH_PB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	-1.46	-Infinity	-1.46	
$N_{oc}^{ m Note 3}$	dBm/15 KHz	-98				
\hat{E}_s/N_{oc}	dB	4 4		-Infinity	4	
RSRP Note 4	dBm/15 KHz	-94	-94	-Infinity	-94	
SCH_RP Note 4	dBm/15 KHz	-94	-94	-Infinity	-94	
Propagation Condition			E	TU70		

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.1.11.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 1000 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.1.12 E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells for UE category 0

A.8.1.12.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the FDD intra-frequency cell search requirements in clause 8.5.2.1.1

The test parameters are given in Table A.8.1.12.1-1 and A.8.1.12.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. PDCCHs indicating new transmissions or retransmissions should be sent continuously to ensure that the UE would not enter the DRX state. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.1.12.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.13 FDD	As specified in clause A.3.1.1.3
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.1
parameters		Channel R.6 FDD	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel		1	One FDD carrier frequency is used.
Number			
Channel Bandwidth	MHz	10	
(BW _{channel})			
A3-Offset	dB	-6	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		DRX_L	As specified in clause A.3.3
Time offset between cells		3 μs	Synchronous cells
T1	S	5	
T2	S	5	

Table A.8.1.12.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Cell 1		C	Cell 2	
		T1	T2	T1	T2	
E-UTRA RF Channel		1		1		
Number						
BW _{channel}	MHz	1	0		10	
Correlation Matrix and		2:	x1		2x1	
Antenna Configuration						
OCNG Patterns						
defined in A.3.2.1.1		OP.1	FDD	OP	.2 FDD	
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB	()	0		
PHICH_RB	dB					
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4 -1.46		-Infinity	-1.46	
$N_{oc}^{ m Note 3}$	dBm/15 KHz			-98		
\hat{E}_s/N_{oc}	dB	4 4		-Infinity	4	
RSRP Note 4	dBm/15 KHz	-94	-94	-Infinity	-94	
SCH_RP Note 4	dBm/15 KHz	-94	-94	-Infinity	-94	
Propagation Condition		ETU70				

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.1.12.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 1000 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.1.13 E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells with DRX for UE category 0

A.8.1.13.1 Test Purpose and Environment

The purpose of the two tests is to verify that the UE makes correct reporting of an event in DRX. The tests will partly verify the FDD-FDD intra-frequency cell search in DRX requirements in clause 8.5.2.1.1.2.

The test parameters are given in Tables A.8.1.13.1-1, A.8.1.13.1-2, A.8.1.13.1-3 and A.8.1.13.1-4. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

Table A.8.1.13.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Parameter	Parameter Unit Value		Comment	
		Test 1	Test 2	
PDSCH parameters		DL Reference Me Channel R.13 FD		As specified in clause A.3.1.1.3
PCFICH/PDCCH/PHICH parameters		DL Reference Me Channel R.6 FDD		As specified in clause A.3.1.2.1
Active cell		Cell 1		
Neighbour cell		Ce	II 2	Cell to be identified.
E-UTRA RF Channel Number		1		One FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	1	0	
A3-Offset	dB	-6		
CP length		Normal		
Hysteresis	dB	0		
Time To Trigger	S	0		
Filter coefficient		0		L3 filtering is not used
DRX		ON		DRX related parameters are defined in Table A.8.1.13.1-3
Time offset between cells		3 μs		Synchronous cells
T1	S	5		
T2	S	5	30	

Table A.8.1.13.11-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Parameter	Unit	Cell 1			Cell 2	
		T1	T2	T1	T2	
E-UTRA RF Channel		1			1	
Number						
BW _{channel}	MHz	·	10		10	
Correlation Matrix and		2	x1		2x1	
Antenna Configuration						
OCNG Patterns						
defined in A.3.2.1.1		OP.1	FDD	OF	2.2 FDD	
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB			0		
SSS_RA	dB					
PCFICH_RB	dB		_			
PHICH_RA	dB		0			
PHICH_RB	dB					
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4 -1.46		-Infinity	-1.46	
$N_{oc}^{ m Note 2}$	dBm/15 KHz			-98		
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4	
RSRP Note 3	dBm/15 KHz	-94	-94	-Infinity	-94	
SCH_RP Note 3	dBm/15 KHz	-94	-94	-Infinity	-94	
Propagation Condition				ETU70	•	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.1.13.1-3: DRX-Configuration for E-UTRAN FDD-FDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Test1	Test2	Comment
Fleid	Value	Value	
onDurationTimer	psf1	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	psf1	36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Table A.8.1.13.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN FDD-FDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Test1	Test2	Comment
Field	Value	Value	
TimeAlignmentTimer	sf500	sf500	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.1.13.2 Test Requirements

In Test 1, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 1000 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE send the measurement report on PUSCH.

In Test 2, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 25600 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

A.8.1.14 E-UTRAN HD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells for UE category

A.8.1.14.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the FDD intra-frequency cell search requirements in clause 8.5.2.1.2.1.

The test parameters are given in Table A.8.1.14.1-1 and A.8.1.14.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.1.14.1-1: General test parameters for E-UTRAN HD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.1 HD-FDD	As specified in clause A.3.1.1.4
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.3 HD-FDD	As specified in clause A.3.1.2.3
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	One FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10	
A3-Offset	dB	-6	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX			OFF
Time offset between cells		3 ms	Asynchronous cells
T1	S	5	
T2	S	5	

Table A.8.1.14.1-2: Cell specific test parameters for E-UTRAN HD-FDD intra-frequency event triggered reporting under fading propagation conditions in asynchronous cells

Parameter	Unit	Cell 1			Cell 2	
		T1	T2	T1	T2	
E-UTRA RF Channel		1			1	
Number						
BW _{channel}	MHz	Ŷ	10		10	
Correlation Matrix and		2	x1		2x1	
Antenna Configuration						
OCNG Patterns						
defined in A.3.2.1.1		OP.1	I FDD	OI	P.2 FDD	
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB		_			
PHICH_RA	dB		0	0		
PHICH_PB	dB					
PDCCH_RA	dB					
PDCCH_PB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	-1.46	-Infinity	-1.46	
$N_{oc}^{ m Note 3}$	dBm/15 KHz			-98		
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4	
RSRP Note 4	dBm/15 KHz	-94	-94	-Infinity	-94	
SCH_RP Note 4	dBm/15 KHz	-94	-94	-Infinity	-94	
Propagation Condition			E	TU70		

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.1.14.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 1000 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.1.15 E-UTRAN HD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells for UE category 0

A.8.1.15.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the FDD intra-frequency cell search requirements in clause 8.5.2.1.2.1

The test parameters are given in Table A.8.1.15.1-1 and A.8.1.15.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. PDCCHs indicating new transmissions or retransmissions should be sent continuously to ensure that the UE would not enter the DRX state. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.1.15.1-1: General test parameters for E-UTRAN HD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.1 HD-FDD	As specified in clause A.3.1.1.4
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.3
parameters		Channel R.3 HD-FDD	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	One FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10	
A3-Offset	dB	-6	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		DRX_L	As specified in clause A.3.3
Time offset between cells		3 μs	Synchronous cells
T1	S	5	
T2	S	5	

Table A.8.1.15.1-2: Cell specific test parameters for E-UTRAN HD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Ce	ell 1		Cell 2	
		T1	T2	T1	T2	
E-UTRA RF Channel		1			1	
Number						
BW _{channel}	MHz	·	10		10	
Correlation Matrix and		2	x1		2x1	
Antenna Configuration						
OCNG Patterns						
defined in A.3.2.1.1		OP.1	FDD	OP	2.2 FDD	
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB		_			
PHICH_RA	dB		0	0		
PHICH_RB	dB					
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
\hat{E}_{s}/I_{ot}	dB	4	-1.46	-Infinity	-1.46	
$N_{oc}^{ m Note 3}$	dBm/15 KHz			-98		
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4	
RSRP Note 4	dBm/15 KHz	-94	-94	-Infinity	-94	
SCH_RP Note 4	dBm/15 KHz	-94	-94	-Infinity	-94	
Propagation Condition				ETU70	•	

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 2: The resources for uplink transmission are assigned to the OE prior to the start of time period 12. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.1.15.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 1000 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.1.16 E-UTRAN HD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells with DRX for UE category 0

A.8.1.16.1 Test Purpose and Environment

The purpose of the two tests is to verify that the UE makes correct reporting of an event in DRX. The tests will partly verify the FDD-FDD intra-frequency cell search in DRX requirements in clause 8.5.2.1.2.2.

The test parameters are given in Tables A.8.1.16.1-1, A.8.1.16.1-2, A.8.1.16.1-3 and A.8.1.16.1-4. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

Table A.8.1.16.1-1: General test parameters for E-UTRAN HD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Parameter	Unit	Value		Comment
		Test 1	Test 2	
PDSCH parameters		DL Reference Me Channel R.1 HD-		As specified in clause A.3.1.1.4
PCFICH/PDCCH/PHICH parameters		DL Reference Me Channel R.3 HD-		As specified in clause A.3.1.2.3
Active cell		Cell 1		
Neighbour cell		Ce	II 2	Cell to be identified.
E-UTRA RF Channel Number			1 One FDD carrier freque	
Channel Bandwidth (BW _{channel})	MHz	1	0	
A3-Offset	dB	-6		
CP length		Normal		
Hysteresis	dB	0		
Time To Trigger	S	0		
Filter coefficient		0		L3 filtering is not used
DRX		ON		DRX related parameters are defined in Table A.8.1.16.1-3
Time offset between cells		3 μs		Synchronous cells
T1	S	5		
T2	S	5	30	

Table A.8.1.16.1-2: Cell specific test parameters for E-UTRAN HD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Parameter	Unit	Unit Cell 1			Cell 2		
		T1	T2	T1	T2		
E-UTRA RF Channel		1		1			
Number							
BW _{channel}	MHz	1	0		10		
Correlation Matrix and		2	x1		2x1		
Antenna Configuration							
OCNG Patterns							
defined in A.3.2.1.1		OP.1	FDD	OP	2.2 FDD		
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB		•				
PHICH_RA	dB		0	0			
PHICH_RB	dB						
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RANote 1	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	-1.46	-Infinity	-1.46		
$N_{oc}^{ m Note~2}$	dBm/15 KHz			-98			
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4		
RSRP Note 3	dBm/15 KHz	-94	-94	-Infinity	-94		
SCH_RP Note 3	dBm/15 KHz	-94	-94	-Infinity	-94		
Propagation Condition				TU70	•		

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Table A.8.1.16.1-3: DRX-Configuration for E-UTRAN HD-FDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Test1	Test2	Comment
rieiu	Value	Value	
onDurationTimer	psf1	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	psf1	36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.1.16.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN HD-FDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Test1	Test2	Comment
rieid	Value	Value	
TimeAlignmentTimer	sf500	sf500	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.1.16.2 Test Requirements

In Test 1, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 1000 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE send the measurement report on PUSCH.

In Test 2, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 25600 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

A.8.1.17 E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

A.8.1.17.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the TDD intra-frequency cell search requirements in clause 8.5.2.1.3.1.

The test parameters are given in Table A.8.1.17.1-1 and A.8.1.17.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. PDCCHs indicating new transmissions or retransmissions should be sent continuously to ensure that the UE would not enter the DRX state. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.1.17.1-1: General test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Value	Comment
		DL Reference Measurement	
PDSCH parameters		Channel R.12 TDD	As specified in clause A.3.1.1.5
		DL Reference Measurement	
PCFICH/PDCCH/PHICH		Channel R.6 TDD	As specified in clause A.3.1.2.2
parameters			
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	One TDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10	
A3-Offset	dB	-6	
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211.
			The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211.
			The same configuration in both cells
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		DRX_L	As specified in clause A.3.3
Time offset between cells		3 μs	Synchronous cells
T1	S	5	
T2	S	5	

Table A.8.1.17.1-2: Cell specific test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Unit Cell 1			Cell 2		
		T1	T2	T1	T2		
E-UTRA RF Channel		1		1			
Number							
BW _{channel}	MHz	1	0		10		
Correlation Matrix and		2	x1	2	2x1		
Antenna Configuration							
OCNG Pattern defined							
in A.3.2.2.1 (OP.1		OP.1	TDD	OP.	2 TDD		
TDD) and in A.3.2.2.2							
(OP.2)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB			0			
PHICH_RA	dB						
PHICH_RB	dB		0				
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$N_{oc}^{\text{Note 3}}$	dBm/15 kHz			-98			
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-94		
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	-1.46	-Infinity	-1.46		
SCH_RP Note 4	dBm/15 kHz	-94 -94		-Infinity	-94		
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4		
Propagation Condition			E	TU70			

Note 1 OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.1.17.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 1000 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled

A.8.1.18 E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells with DRX

A.8.1.18.1 Test Purpose and Environment

The purpose of the two tests is to verify that the UE makes correct reporting of an event in DRX. The tests will partly verify the TDD-TDD intra-frequency cell search in DRX requirements in clause 8.5.2.1.3.2.

The test parameters are given in Tables A.8.1.18.1-1, A.8.1.18.1-2, A.8.1.18.1-3 and A.8.1.18.1-4. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

Table A.8.1.18.1-1: General test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Parameter	Unit	Value		Comment
		Test 1	Test 2	1
		DL Reference Measurement		
PDSCH parameters		Channel R.12	TDD	As specified in clause A.3.1.1.5
		DL Reference	Measurement	
PCFICH/PDCCH/PHICH		Channel R.6 T	DD	As specified in clause A.3.1.2.2
parameters				
Active cell		Cell 1		
Neighbour cell		Ce	ell 2	Cell to be identified.
E-UTRA RF Channel Number		,	1	One TDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	1	0	
A3-Offset	dB	-6		
CP length		Normal		
Special subframe configuration		6		As specified in table 4.2-1 in TS 36.211.
-				The same configuration in both cells
Uplink-downlink configuration		1		As specified in table 4.2-2 in TS 36.211.
				The same configuration in both cells
Hysteresis	dB	0		
Time To Trigger	S	0		
Filter coefficient		0		L3 filtering is not used
DRX		ON		DRX related parameters are defined in
				Table A.8.1.18.1-3
Time offset between cells		3 μs		Synchronous cells
T1	S	5		
T2	S	5	30	

Table A.8.1.18.1-2: Cell specific test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Parameter	Unit	Се	II 1		Cell 2	
		T1	T2	T1	T2	
E-UTRA RF Channel			1		1	
Number						
BW _{channel}	MHz	1	0		10	
Correlation Matrix and		2:	κ1		2x1	
Antenna Configuration						
OCNG Pattern defined						
in A.3.2.2.1 (OP.1		OP.1	TDD	OF	P.2 TDD	
TDD) and in A.3.2.2.2						
(OP.2)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	()	0		
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{oc}^{ m Note~2}$	dBm/15 kHz			-98		
RSRP Note 3	dBm/15 kHz	-94	-94	-Infinity	-94	
\hat{E}_{s}/I_{ot}	dB	4	-1.46	-Infinity	-1.46	
SCH_RP Note 3	dBm/15 kHz	-94	-94	-Infinity	-94	
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4	
Propagation Condition			E	TU70	•	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.1.18.1-3: DRX-Configuration for E-UTRAN TDD-TDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Test1	Test2	Comment
Fleid	Value	Value	
onDurationTimer	psf1	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	psf1	36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Table A.8.1.18.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN TDD-TDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Test1 Test2		Comment		
rieid	Value	Value			
TimeAlignmentTimer	sf500	sf500	As specified in clause 6.3.2 in TS 36.331		
sr-ConfigIndex	2	2	For further information see clause 6.3.2 in TS 36.331 and clause 10.1 in TS 36.213.		

A.8.1.18.2 Test Requirements

In Test 1, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 1000 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE send the measurement report on PUSCH.

In Test 2, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 25600 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

A.8.1.19 E-UTRAN FD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps for UE category 0

A.8.1.19.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in clause 8.5.2.1.4.

The test scenario comprises of one E-UTRA FDD carrier and two cells as given in tables A.8.1.19.1-1 and A.8.1.19.1-2. PDCCHs indicating new transmissions should be sent continuously to ensure that the UE would have ACK/NACK sending during identifying a new CGI of E-UTRAN cell. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE.

Table A.8.1.19.1-1: General test parameters for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps for UE category 0

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.15 FDD	As specified in clause A.3.1.1.3
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	Only one FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10	
CP length		Normal	
A3-Offset	dB	-3	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
si-RequestForHO		TRUE	As specified in clause 5.5.3.1 in TS 36.331.
T1	S	5	
T2	S	≤10	
T3	S	5	

Table A.8.1.19.1-2: Cell specific test parameters for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps for UE category 0

Parameter	Unit	Cell 1			Cell 2			
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel		1			1			
Number								
BW _{channel}	MHz		10		10			
Correlation Matrix and			2x1		2x1			
Antenna Configuration								
OCNG Patterns defined in		OP.10	OP.10	OP.10	OP.2	OP.2	OP.2	
A.3.2.1.10 (OP.10 FDD)		FDD	FDD	FDD	FDD	FDD	FDD	
and in A.3.2.1.2 (OP.2								
FDD)								
PBCH_RA	dB							
PBCH_RB	dB		_					
PSS_RA	dB		-3		-3			
SSS_RA	dB							
PCFICH_RB	dB		0		0			
PHICH_RA	dB	-3			-3			
PHICH_PB	dB							
PDCCH_RA	dB	0			0			
PDCCH_PB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB	-3			-3			
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
\hat{E}_{s}/I_{ot}	dB	8	-3.3	-3.3	-Infinity	2.36	2.36	
$N_{oc}^{$	dBm/15 KHz	-98			98			
\hat{E}_s/N_{oc}	dB	8	8	8	-Infinity	11	11	
RSRP Note 3	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87	
SCH_RP Note3	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87	
Propagation Condition		AWGN						
Timing offset to Cell 1	ms	- 3						
	sad such that both calls are fully allocated and a constant total transmitted nower spectral							

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.1.19.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 210 milliseconds from the start of T3.

Test requirement = RRC Procedure delay + $T_{identify CGI LC-UE, intra}$ + reporting delay

= 15 + 190 + 2ms from the start of T3

= 207 ms, allow 210 ms.

The UE shall be scheduled continuously throughout the test, and from the start of T3 until 210 ms at least 112 ACK/NACK shall be detected as being transmitted by the UE.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The overall 112 ACK/NACK number is caused by two parts. Firstly, at least 92 ACK/NACK shall be sent during identifying the cell global identifier of cell 2 according to the requirement in Clause 8.5.2.1.4. Secondly, given that continuous DL data allocation, additional 20 ACK/NACK shall be sent from the start of T3 until 210 ms excludes 190 ms for identifying the cell global identifier of cell 2.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

A.8.1.20 E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX for UE category 0

A.8.1.20.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in clause 8.5.2.1.4. The requirement is verified in a DRX configuration.

The test scenario comprises of one E-UTRA FDD carrier and two cells as given in tables A.8.1.20.1-1, A.8.1.20.1-2, A.8.1.20.1-3 and A.8.1.20.1-4. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE.

In the test UE needs to be provided at least once every 1280ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE sends scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

Table A.8.1.20.1-1: General test parameters for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX for UE category 0

Parameter	Unit	Value	Comment	
PDSCH parameters		DL Reference Measurement Channel R.14 FDD	As specified in clause A.3.1.1.3	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1	
Active cell		Cell 1		
Neighbour cell		Cell 2	Cell to be identified.	
E-UTRA RF Channel Number		1	Only one FDD carrier frequency is used.	
Channel Bandwidth (BW _{channel})	MHz	10		
CP length		Normal		
A3-Offset	dB	-3		
Hysteresis	dB	0		
Time To Trigger	S	0		
Filter coefficient		0	L3 filtering is not used	
DRX		ON	DRX related parameters are defined in Table A.8.1.6.1-3	
si-RequestForHO		TRUE	As specified in clause 5.5.3.1 in TS 36.331.	
T1	S	5		
T2	S	≤30	UE should report cell within 25.6s (20 DRX cycles)	
T3	S	5		

Table A.8.1.20.1-2: Cell specific test parameters for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX for UE category 0

Parameter	Unit	Cell 1			Cell 2			
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel		1			1			
Number								
BW _{channel}	MHz		10		10			
Correlation Matrix and			2x1		2x1			
Antenna Configuration								
OCNG Patterns defined in		OP.1	OP.1	OP.1	OP.2	OP.2	OP.2	
A.3.2.1.1 (OP.1 FDD) and		FDD	FDD	FDD	FDD	FDD	FDD	
in A.3.2.1.2 (OP.2 FDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB		-3		-3			
SSS_RA	dB							
PCFICH_RB	dB		0		0			
PHICH_RA	dB	-3			-3			
PHICH_PB	dB							
PDCCH_RA	dB	0				0		
PDCCH_PB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB	-3			-3			
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
\hat{E}_{s}/I_{ot}	dB	8	-3.3	-3.3	-Infinity	2.36	2.36	
$N_{oc}^{ m Note~2}$	dBm/15 KHz	-98						
\hat{E}_s/N_{oc}	dB	8	8	8	-Infinity	11	11	
RSRP Note 3	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87	
SCH_RP Note3	dBm/15 KHz	-90 -90 -90 -Infinity -87				-87		
Propagation Condition				AW				
Timing offset to Cell 1	ms	- 3						
	used such that both cells are fully allocated and a constant total transmitted never an extra							

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.1.20.1-3: DRX configuration for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX for UE category 0

Field	Value	Comment
onDurationTimer	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table A.8.1.20.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX for UE category 0

Field	Value	Comment
TimeAlignmentTimer	Infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.1.20.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 210 milliseconds from the start of T3.

Test requirement = RRC Procedure delay + $T_{identify CGLLC-UE, intra}$ + reporting delay

= 15 + 190 + 2ms from the start of T3

= 207 ms, allow 210 ms.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.1.21 E-UTRAN HD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps for UE category 0

A.8.1.21.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in clause 8.5.2.1.5.

The test scenario comprises of one E-UTRA FDD carrier and two cells as given in tables A.8.1.21.1-1 and A.8.1.21.1-2. PDCCHs indicating new transmissions should be sent continuously to ensure that the UE would have ACK/NACK sending during identifying a new CGI of E-UTRAN cell. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE.

Table A.8.1.21.1-1: General test parameters for E-UTRAN HD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps for UE category 0

Parameter	Unit	Value	Comment
PDSCH parameters			As specified in clause A.3.1.1.4
		Channel R.2 HD-FDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.3
		Channel R.3 HD-FDD	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	Only one FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10	
CP length		Normal	
A3-Offset	dB	-3	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
si-RequestForHO		TRUE	As specified in clause 5.5.3.1 in TS 36.331.
T1	S	5	
T2	S	≤10	
T3	S	5	

Table A.8.1.21.1-2: Cell specific test parameters for E-UTRAN HD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps for UE category 0

Parameter	Unit		Cell 1		Cell 2		
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel		1				1	
Number							
BW _{channel}	MHz	10				10	
Correlation Matrix and			2x1			2x1	
Antenna Configuration							
OCNG Patterns defined in		OP.10	OP.10	OP.10	OP.2	OP.2	OP.2
A.3.2.1.10 (OP.10 FDD)		FDD	FDD	FDD	FDD	FDD	FDD
and in A.3.2.1.2 (OP.2							
FDD)							
PBCH_RA	dB						
PBCH_RB	dB		0			0	
PSS_RA	dB		-3		-3		
SSS_RA	dB						
PCFICH_RB	dB		0		0		
PHICH_RA	dB		-3		-3		
PHICH_PB	dB				+		
PDCCH_RA	dB		0		0		
PDCCH_PB	dB						
PDSCH_RA	dB		•				
PDSCH_RB	dB		-3		-3		
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB			1 00	1.6.	0.00	
\hat{E}_{s}/I_{ot}	dB	8	-3.3	-3.3	-Infinity	2.36	2.36
N_{oc} Note 2	dBm/15 KHz	-98			8		
\hat{E}_s/N_{oc}	dB	8	8	8	-Infinity	11	11
RSRP Note 3	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87
SCH_RP Note3	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87
Propagation Condition		AWGN					
Timing offset to Cell 1	ms		-			3	
	sed such that both cells are fully allocated and a constant total transmitted power spectral						

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.1.21.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 210 milliseconds from the start of T3.

Test requirement = RRC Procedure delay + $T_{identify CGI LC-UE, intra}$ + reporting delay

= 15 + 190 + 2ms from the start of T3

= 207 ms, allow 210 ms.

The UE shall be scheduled continuously throughout the test, and from the start of T3 until 210 ms at least 112 ACK/NACK shall be detected as being transmitted by the UE.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The overall 112 ACK/NACK number is caused by two parts. Firstly, at least 92 ACK/NACK shall be sent during identifying the cell global identifier of cell 2 according to the requirement in Clause 8.5.2.1.5. Secondly, given that continuous DL data allocation, additional 20 ACK/NACK shall be sent from the start of T3 until 210 ms excludes 190 ms for identifying the cell global identifier of cell 2.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

A.8.1.22 E-UTRAN HD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX for UE category 0

A.8.1.22.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in clause 8.5.2.1.5. The requirement is verified in a DRX configuration.

The test scenario comprises of one E-UTRA FDD carrier and two cells as given in tables A.8.1.22.1-1, A.8.1.22.1-2, A.8.1.22.1-3 and A.8.1.22.1-4. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE.

In the test UE needs to be provided at least once every 1280ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE sends scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

Table A.8.1.22.1-1: General test parameters for E-UTRAN HD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX for UE category 0

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.2 HD-FDD	As specified in clause A.3.1.1.4
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.3 HD-FDD	As specified in clause A.3.1.2.3
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	Only one FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10	
CP length		Normal	
A3-Offset	dB	-3	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		ON	DRX related parameters are defined in Table A.8.1.6.1-3
si-RequestForHO		TRUE	As specified in clause 5.5.3.1 in TS 36.331.
T1	S	5	
T2	S	≤30	UE should report cell within 25.6s (20 DRX cycles)
T3	S	5	

Table A.8.1.22.1-2: Cell specific test parameters for E-UTRAN HD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX for UE category 0

Parameter	Unit		Cell 1		Cell 2		
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel		1				1	
Number							
BW _{channel}	MHz		10			10	
Correlation Matrix and			2x1			2x1	
Antenna Configuration							
OCNG Patterns defined in		OP.1	OP.1	OP.1	OP.2	OP.2	OP.2
A.3.2.1.1 (OP.1 FDD) and		FDD	FDD	FDD	FDD	FDD	FDD
in A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB		-3		-3		
SSS_RA	dB						
PCFICH_RB	dB		0		0		
PHICH_RA	dB		-3		-3		
PHICH_PB	dB						
PDCCH_RA	dB		0		0		
PDCCH_PB	dB						
PDSCH_RA	dB				_		
PDSCH_RB	dB		-3		-3		
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	8	-3.3	-3.3	-Infinity	2.36	2.36
$N_{oc}^{ m Note~2}$	dBm/15 KHz	-9i			98		
\hat{E}_s/N_{oc}	dB	8	8	8	-Infinity	11	11
RSRP Note 3	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87
SCH_RP Note3	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87
Propagation Condition			•	AW	/GN		-
Timing offset to Cell 1	ms		-			3	
	used such that both calls are fully allocated and a constant total transmitted navier an extra						

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Table A.8.1.22.1-3: DRX configuration for E-UTRAN HD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX for UE category 0

Field	Value	Comment
onDurationTimer	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.1.22.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN HD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX for UE category 0

Field	Value	Comment
TimeAlignmentTimer	Infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.1.22.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 210 milliseconds from the start of T3.

 $Test\ requirement\ = RRC\ Procedure\ delay+\ T_{identify_CGI_LC-UE,\ intra}+reporting\ delay$

= 15 + 190 + 2ms from the start of T3

= 207 ms, allow 210 ms.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.2 E-UTRAN TDD Intra-frequency Measurements

A.8.2.1 E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

A.8.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the TDD intra-frequency cell search requirements in clause 8.1.2.2.2.1.

The test parameters are given in Table A.8.2.1.1-1 and A.8.2.1.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. PDCCHs indicating new transmissions or retransmissions shall be sent continuously to ensure that the UE would not enter the DRX state. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.2.1.1-1: General test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Value	Comment
DDCCII peremetera		DL Reference Measurement	As appointed in algues A 2.1.1.2
PDSCH parameters		Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	One TDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10	
A3-Offset	dB	-6	
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211.
op down			The same configuration in both cells
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		DRX_L	As specified in clause A.3.3
Time offset between cells		3 μs	Synchronous cells
T1	S	5	
T2	S	5	

Table A.8.2.1.1-2: Cell specific test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Се				
		T1	T2	T1	T2	
E-UTRA RF Channel			1		1	
Number						
BW _{channel}	MHz	1	0		10	
Correlation Matrix and		1x2	Low	1)	2 Low	
Antenna Configuration						
OCNG Pattern defined						
in A.3.2.2.1 (OP.1		OP.1	TDD	OF	2.2 TDD	
TDD) and in A.3.2.2.2						
(OP.2)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB			0		
PCFICH_RB	dB					
PHICH_RA	dB		_			
PHICH_RB	dB	()			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{oc}^{ m Note 3}$	dBm/15 kHz			-98		
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-94	
\hat{E}_{s}/I_{ot}	dB	4	-1.46	-Infinity	-1.46	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-94	
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4	
Propagation Condition			E	TU70		

Note 1 OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.2.1.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 800 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled

A.8.2.2 E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells with DRX

A.8.2.2.1 Test Purpose and Environment

The purpose of the two tests is to verify that the UE makes correct reporting of an event in DRX. The tests will partly verify the TDD-TDD intra-frequency cell search in DRX requirements in clause 8.1.2.2.1.2.

The test parameters are given in Tables A.8.1.3.1-1, A.8.1.3.1-2, A.8.1.3.1-3 and A.8.1.3.1-4. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

Table A.8.2.2.1-1: General test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Parameter	Unit	Value		Comment
		Test 1	Test 2	1
		DL Reference Measurement		
PDSCH parameters		Channel R.0 T	DD	As specified in clause A.3.1.1.2
		DL Reference	Measurement	
PCFICH/PDCCH/PHICH		Channel R.6 T	DD	As specified in clause A.3.1.2.2
parameters				
Active cell		Cell 1		
Neighbour cell		Ce	ell 2	Cell to be identified.
E-UTRA RF Channel Number			1	One TDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10		
A3-Offset	dB	-6		
CP length		Normal		
Special subframe configuration		6		As specified in table 4.2-1 in TS 36.211.
-				The same configuration in both cells
Uplink-downlink configuration		1		As specified in table 4.2-2 in TS 36.211.
				The same configuration in both cells
Hysteresis	dB	0		
Time To Trigger	S	0		
Filter coefficient		0		L3 filtering is not used
DRX		ON		DRX related parameters are defined in
				Table A.8.2.2.1-3
Time offset between cells		3 μs		Synchronous cells
T1	S	5		
T2	S	5 30		

Table A.8.2.2.1-2: Cell specific test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used

Parameter	Unit	Се	II 1	Cell 2			
		T1	T2	T1	T2		
E-UTRA RF Channel			1		1		
Number							
BW _{channel}	MHz	1	0		10		
Correlation Matrix and		1x2	Low	1>	2 Low		
Antenna Configuration							
OCNG Pattern defined							
in A.3.2.2.1 (OP.1		OP.1	TDD	OP	.2 TDD		
TDD) and in A.3.2.2.2							
(OP.2)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB			0			
PHICH_RA	dB		_				
PHICH_RB	dB	()				
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$N_{oc}^{ m Note~2}$	dBm/15 kHz			-98			
RSRP Note 3	dBm/15 kHz	-94 -94		-Infinity	-94		
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	-1.46	-Infinity	-1.46		
SCH_RP Note 3	dBm/15 kHz	-94	-94	-Infinity	-94		
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4		
Propagation Condition	Propagation Condition ETU70						
	OCNG shall be used such that both calls are fully allocated and a constant total transmitted power spectral density is						

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Table A.8.2.2.1-3: DRX-Configuration for E-UTRAN TDD-TDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Test1	Test2	Comment
rieiu	Value	Value	
onDurationTimer	psf1	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	psf1	36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.2.2.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN TDD-TDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Test1	Test2	Comment
rieid	Value	Value	
TimeAlignmentTimer	sf500	sf500	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	2	2	For further information see clause 6.3.2 in TS 36.331 and clause 10.1 in TS 36.213.

A.8.2.2.2 Test Requirements

In Test 1, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 800 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE send the measurement report on PUSCH.

In Test 2, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 25600 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.

NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

A.8.2.3 E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

A.8.2.3.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in clause 8.1.2.2.4.

The test scenario comprises of one E-UTRA TDD carrier and two cells as given in tables A.8.2.3.1-1 and A.8.2.3.1-2. PDCCHs indicating new transmissions shall be sent continuously to ensure that the UE would have ACK/NACK sending during identifying a new CGI of E-UTRAN cell. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE.

Table A.8.2.3.1-1: General test parameters for E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	Only one TDD carrier frequency is used.
Channel Bandwidth (BWchannel)	MHz	10	
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211. The same configuration in both cells
A3-Offset	dB	-3	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	-
si-RequestForHO		TRUE	As specified in clause 5.5.3.1 in TS 36.331.
Time offset between cells	μs	3	Synchronous cells
T1	s	5	
T2	s	≤10	
T3	s	5	

Table A.8.2.3.1-2: Cell specific test parameters for E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

			Cell 1		Cell 2			
		T1	T2	Т3	T1	T2	T3	
E-UTRA RF Channel			1			1		
Number								
BW _{channel}	MHz		10			10		
OCNG Patterns defined in		OP.1	OP.1	OP.1	OP.2	OP.2	OP.2	
A.3.2.2.1 (OP.1 TDD) and		TDD	TDD	TDD	TDD	TDD	TDD	
in A.3.2.2.2 (OP.2 TDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB		0			0		
PHICH_RB	dB							
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RANote 1	dB							
OCNG_RB ^{Note 1}	dB							
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	8	-3.3	-3.3	-Infinity	2.36	2.36	
$N_{oc}^{ m Note 2}$	dBm/15 KHz			-(98			
\hat{E}_s/N_{oc}	dB	8	8	8	-Infinity	11	11	
RSRP Note 3	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87	
SCH_RP Note3	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87	
Propagation Condition		AWGN						
	sed such that both ed for all OFDM syn		y allocated a	nd a consta	nt total trans	mitted powe	r spectral	

density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are Note 3: not settable parameters themselves

A.8.2.3.2 **Test Requirements**

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

 $Test\ requirement = RRC\ Procedure\ delay +\ T_{identify\ CGI,intra} + reporting\ delay$

= 15 + 150 + 2ms from the start of T3

= 167 ms, allow 170 ms.

The UE shall be scheduled continuously throughout the test, and from the start of T3 until 170 ms at least 47 ACK/NACK shall be detected as being transmitted by the UE.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The overall 47 ACK/NACK number is caused by two parts. Firstly, at least 35 ACK/NACK shall be sent during identifying the cell global identifier of cell 2 according to the requirement for UL/DL configuration #1 in Table 8.1.2.2.4.1-1 of Clause 8.1.2.2.4.1. Secondly, given that continuous DL data allocation, additional 12 ACK/NACK shall be sent from the start of T3 until 170 ms excludes 150 ms for identifying the cell global identifier of cell 2.

A.8.2.4 E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

A.8.2.4.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in clause 8.1.2.2.4. The requirement is verified in a DRX configuration.

The test scenario comprises of one E-UTRA TDD carrier and two cells as given in tables A.8.2.4.1-1, A.8.2.4.1-2, A.8.2.4.1-3 and A.8.2.4.1-4. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE.

In the test UE needs to be provided at least once every 1280ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE sends scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

Table A.8.2.4.1-1: General test parameters for E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	Only one TDD carrier frequency is used.
Channel Bandwidth (BWchannel)	MHz	10	
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211. The same configuration in both cells
A3-Offset	dB	-3	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		ON	DRX related parameters are defined in Table A.8.2.4.1-3
si-RequestForHO		TRUE	As specified in clause 5.5.3.1 in TS 36.331.
Time offset between cells	μs	3	Synchronous cells
T1	s	5	
T2	s	≤30	UE shall report cell within 25.6s (20 DRX cycles)
T3	S	5	

Table A.8.2.4.1-2: Cell specific test parameters for E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Parameter	Unit		Cell 1		Cell 2			
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel			1			1		
Number								
BW _{channel}	MHz		10			10		
OCNG Patterns defined in		OP.1	OP.1	OP.1	OP.2	OP.2	OP.2	
A.3.2.2.1 (OP.1 TDD) and		TDD	TDD	TDD	TDD	TDD	TDD	
in A.3.2.2.2 (OP.2 TDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB					•		
PHICH_RA	dB		0			0		
PHICH_RB	dB							
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	dB	8	-3.3	-3.3	-Infinity	2.36	2.36	
$N_{oc}^{ m Note~2}$	dBm/15 KHz			-6	98			
\hat{E}_s/N_{oc}	dB	8	8	8	-Infinity	11	11	
RSRP Note 3	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87	
SCH_RP Note3	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87	
Propagation Condition		AWGN						
Note 1: OCNG shall be us	sed such that both	cells are full	y allocated a	nd a consta	nt total trans	mitted powe	r spectral	
	achieved for all OCDM averbala							

- density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{\it oc}$ to be fulfilled.
- RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are Note 3: not settable parameters themselves.

Table A.8.2.4.1-3: DRX configuration for E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Field	Value	Comment
onDurationTimer	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table A.8.2.4.1-4: TimeAlignmentTimer - Configuration for E-UTRAN TDD - TDD Intra frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Field	Value	Comment
TimeAlignmentTimer	Infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	2	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.2.4.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

 $Test \ requirement = RRC \ Procedure \ delay + \ T_{identify \ CGI, intra} + reporting \ delay$

- = 15 + 150 + 2ms from the start of T3
- = 167 ms, allow 170 ms.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.2.5 E-UTRAN TDD-TDD Intra-Frequency Event-Triggered Reporting under Time Domain Measurement Resource Restriction with Non-MBSFN ABS

A.8.2.5.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects and reports Event A3 (Neighbour becomes offset better than PCell) defined in TS 36.331 [2] within the requirements specified in Clause 8.1.2.8.2.1 under a time domain measurement resource restriction and non-MBSFN ABS configured in the aggressor cell.

The test parameters are given in Tables A.8.2.5.1-1 and A.8.2.5.1-2 below. It is indicated to the UE in the measurement control information that event-triggered reporting with Event A3 is used. In the test there are two synchronous cells, Cell 1 and Cell 2, on the same RF channel. Cell 1 is the PCell, and it is also the aggressor cell to Cell 2. Cell 2 is the cell to be identified. The test consists of two successive time periods with time duration of T1 and T2, respectively. During time duration T1, the UE shall not have any timing information on Cell 2.

Non-MBSFN ABS pattern is configured for Cell 1 during the test. The UE is configured by higher layers via Cell 1 with a time domain measurement resource restriction pattern for performing E-UTRAN TDD intra-frequency measurements on neighbour cells. The UE is also configured with a time domain measurement resource restriction pattern for the PCell measurements. The information for both measurement patterns shall be provided to the UE via higher layers during T1.

Table A.8.2.5.1-1: General test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under time domain measurement resource restriction with non-MBSFN ABS

Parameter	Unit	Value	Comment
		DL Reference Measurement	
PDSCH parameters		Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
PCell		Cell 1	Also the aggressor cell. Active in T1 and T2
Neighbour cell		Cell 2	Cell to be identified. Active only in T2.
PCell ABS configuration		Non-MBSFN ABS	As defined in Table A.3.4.1.1-1
E-UTRA RF Channel Number		1	One TDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10	One TDD carrier frequency is asea.
A3-Offset	dB	-11	
Event A3 measurement quantity	ub .	RSRP	
CP length		Normal	
Special subframe configuration		6	As specified in Table 4.2-1 in TS 36.211. The
Special subframe configuration		0	same configuration in both cells
Uplink-downlink configuration		1	As specified in Table 4.2-2 in TS 36.211. The
Opinik-downlink configuration		'	same configuration in both cells
Hysteresis	dB	0	Same configuration in both cens
Time To Trigger	S	0	
Filter coefficient	5	0	L3 filtering is not used
DRX		0	OFF
Time offset between cells	+	22	Synchronous cells
	_	3 μs	Synchronous cells
T1 T2	S	5	
	S	5	
Physical cell ID PCI		(PCI _{cell1} - PCI _{cell2})mod6 != 0	Cell PCIs are selected so that the condition is met
ABS pattern		'00000000010000000001'	TDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 1 during T1. The first/leftmost bit corresponds to the subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (20) divided by 10. No MBSFN subframes are cofigured in the ABS subframes.
Time domain measurement resource restriction pattern for neighbour cell measurements on RF Channel 1		'000000001000000001'	Time domain measurement resource restriction pattern for neighbor cell measurement signalled to the UE in measSubframePattern-Neigh IE in measSubframePatternConfig-Neigh, as defined in TS 36.331, clause 6.3.5. Configured during T1 for Cell 2 measurements.
Time domain measurement resource restriction pattern for PCell measurements		'100000000100000000'	Configured during T1 for Cell 1 measurements

Table A.8.2.5.1-2: Cell specific test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under time domain measurement resource restriction with non-MBSFN ABS

Parameter	Unit	Ce	Cell 1		Cell 2	
		T1	T2	T1	T2	
E-UTRA RF Channel		1			1	
Number						
BW _{channel}	MHz	1	10		10	
Correlation Matrix and		1x2	Low	1x	2 Low	
Antenna Configuration						
OCNG Pattern defined						
in A.3.2.2.1 (OP.1		OP.1	TDD	OP	.2 TDD	
TDD) and in A.3.2.2.2						
(OP.2)						
PBCH_RA	dB		ABS subframe			
PBCH_RB	dB	channel power				
PSS_RA	dB	Table A.3	3.4.1.1-1.			
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB			0		
PHICH_RB	dB					
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{oc}^{ m Note 3}$	dBm/15 kHz			-98		
$(\hat{E}_s/N_{oc})_{meas}$ Note 5	dB	1	1	-Infinity	-4	
(\hat{E}_s/N_{oc})abs	dB	1	1	N/A	N/A	
RSRP Note 4,5	dBm/15 kHz	-97	-97	-Infinity	-102	
SCH_RP Note 4	dBm/15 kHz	-97	-97	-Infinity	-102	
CRS $\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	1	-0.5	-Infinity	-4	
SCH $\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	1	-0.5	-Infinity	-7.5	
Propagation Condition			E	TU30		
Note 1: OCNG shall be	e used such that he	oth cells are fully	allocated and a	constant total tr	ansmitted nower	

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. Applies to all subframes.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: RSPP is estimated for Cell 2 during the restricted measurement subframes for neighbour cells. RSPP is estimated for Cell 1 during the PCell restricted subframes.

A.8.2.5.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for Cell 2, with a measurement reporting delay less than 1000 ms from the beginning of time period T2.

The UE shall not send event-triggered measurement reports as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90% for the tested Event A3.

NOTE: The actual overall delays measured in the tests may be up to $2 \times TTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.2.6 E-UTRAN TDD-TDD Intra-Frequency Event-Triggered Reporting under Time Domain Measurement Resource Restriction with CRS Assistance Information and Non-MBSFN ABS

A.8.2.6.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects and reports Event A3 (neighbour becomes offset better than PCell) defined in TS 36.331 [2] within the requirements specified in Clause 8.1.2.8.4, when the UE is provided with a time-domain measurement resource restriction pattern and CRS assistance information, and when non-MBSFN ABS configured in the interfering cells.

The test parameters are given in Tables A.8.2.6.1-1 and A.8.2.6.1-2 below. It is indicated to the UE in the measurement control information that event-triggered reporting with Event A3 is used. In the test, there are three synchronous cells, Cell 1, Cell 2, and Cell 3, on the same RF channel. Cell 1 is the PCell. Cell 3 is the cell to be identified. A non-MBSFN ABS pattern is configured in each of the Cell 1 and Cell 2 during the entire test. The test consists of two successive time periods with time duration of T1 and T2, respectively. During time duration T1, the UE shall not have any timing information on Cell 3.

The UE is configured by higher layers with a time domain measurement resource restriction pattern for performing E-UTRAN TDD intra-frequency measurements on neighbour cells, nsamely Cell 3 measurements. The UE is also provided via higher layers with the CRS assistance information for Cell 2. The information for both measurement patterns and the CRS assistance information shall be provided via RRC to the UE during T1.

Table A.8.2.6.1-1: General test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under time domain measurement resource restriction with CRS assistance information and non-MBSFN ABS

Parameter	Parameter Unit Value		Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
PCell		Cell 1	Also a first interfering cell to Cell 3. Active in T1 and T2.
Neighbour cells		Cell 2 and Cell 3	Cell 2 is a second interfering cell; Cell 2 is active in T1 and T2. Cell 3 is the cell to be identified; Cell 3 is active only in T2.
ABS transmission configuration		Non-MBSFN ABS	As defined in Table A.3.4.1.1-1
E-UTRA RF Channel Number		1	One TDD carrier frequency is used
Channel Bandwidth (BW _{channel})	MHz	10	For all cells in the test
A3-Offset	dB	-14	
Event A3 measurement quantity		RSRP	
CP length		Normal	
Special subframe configuration		6	As specified in Table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in Table 4.2-2 in TS 36.211. The same configuration in both cells
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX			OFF
Time offset between cells	μѕ	Cell 2 offset with respect to Cell 1: 0 Cell 3 offset with respect to Cell 1: -2.5	Three synchronous cells
T1	S	5	
T2	S	5	
	3		
Physical cell IDs	3	(PCI _{cell1} - PCI _{cell3})mod6 = 0 (PCI _{cell2} - PCI _{cell3})mod6 != 0 PCI _{cell1} not equal to PCI _{cell3}	Cell PCIs are selected so that all conditions are met
	3	(PCI _{cell1} - PCI _{cell3})mod6 = 0 (PCI _{cell2} - PCI _{cell3})mod6 != 0	conditions are met TDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. The first/leftmost bit corresponds to the Pcell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (20) divided by 10. No MBSFN subframes are configured in the ABS subframes. Provided fto the UE for Cell 1 and Cell 2 during T1.
Physical cell IDs ABS pattern Time domain measurement resource restriction pattern for neighbour cell measurements on RF Channel 1		(PCI _{cell1} - PCI _{cell3})mod6 = 0 (PCI _{cell2} - PCI _{cell3})mod6 != 0 PCI _{cell1} not equal to PCI _{cell3}	conditions are met TDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. The first/leftmost bit corresponds to the Pcell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (20) divided by 10. No MBSFN subframes are configured in the ABS subframes. Provided fto the UE for Cell 1 and Cell 2 during T1. Time domain measurement resource restriction pattern for neighbor cell measurement signalled to the UE in measSubframePatternNeigh IE in measSubframePatternConfigNeigh, as defined in TS 36.331, clause 6.3.5. Provided to the UE during T1 for Cell 3 measurements. The cell list in measSubframeCellList IE shall contain Cell 3 but not Cell 2.
Physical cell IDs ABS pattern Time domain measurement resource restriction pattern for neighbour cell measurements on		(PCI _{cell1} - PCI _{cell3})mod6 = 0 (PCI _{cell2} - PCI _{cell3})mod6 != 0 PCI _{cell1} not equal to PCI _{cell3}	TDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. The first/leftmost bit corresponds to the Pcell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (20) divided by 10. No MBSFN subframes are configured in the ABS subframes. Provided fto the UE for Cell 1 and Cell 2 during T1. Time domain measurement resource restriction pattern for neighbor cell measurement signalled to the UE in measSubframePatternNeigh IE in measSubframePatternConfigNeigh, as defined in TS 36.331, clause 6.3.5. Provided to the UE during T1 for Cell 3 measurements. The cell list in measSubframeCellList IE shall contain
Physical cell IDs ABS pattern Time domain measurement resource restriction pattern for neighbour cell measurements on RF Channel 1 Time domain measurement resource restriction pattern for		(PCI _{cell1} - PCI _{cell3})mod6 = 0 (PCI _{cell2} - PCI _{cell3})mod6 != 0 PCI _{cell1} not equal to PCI _{cell3} '00000000010000000001'	TDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. The first/leftmost bit corresponds to the Pcell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (20) divided by 10. No MBSFN subframes are configured in the ABS subframes. Provided fto the UE for Cell 1 and Cell 2 during T1. Time domain measurement resource restriction pattern for neighbor cell measurement signalled to the UE in measSubframePatternNeigh IE in measSubframePatternConfigNeigh, as defined in TS 36.331, clause 6.3.5. Provided to the UE during T1 for Cell 3 measurements. The cell list in measSubframeCellList IE shall contain Cell 3 but not Cell 2.

mbsfn-		MBSFN-SubframeConfig element with
SubframeConfi	oneFrame = '000000'	subframe allocation one
gList		Frame='000000'.

Table A.8.2.6.1-2: Cell specific test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under time domain measurement resource restriction with CRS assistance information and non-MBSFN ABS

Parameter	Unit	Cel	I 1	Cell 2		Cell 3	
Parameter	Unit	T1	T2	T1	T2	T1	T2
E-UTRA RF Channel		1		1		1	
Number		'		'		I	
BW _{channel}	MHz		10		10		0
Correlation Matrix and		1x2	1x2 Low		1x2 Low		Low
Antenna Configuration							
OCNG Patterns defined in							OP.2
A.3.2.2.1 (OP.1 TDD) and		OP.1	TDD	OP.2	2 TDD	N/A	TDD
in A.3.2.2.2 (OP.2 TDD)							- 100
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB	Non-ARS	and ARS	Non ARS	Non ADC and ADC		
PHICH_RA	dB		Non-ABS and ABS subframe channel powers defined in Table A.3.4.1.1-1. Non-ABS and ABS subframe channel powers defined in Table A.3.4.1.1-1.			N/A	
PHICH_RB	dB						0
PDCCH_RA	dB						
PDCCH_RB	dB	Table 71.c	,. 	1 abie A.J. 7. 1. 1-1.			
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$N_{oc}^{ m Note~3}$	dBm/15				·98		
TV oc	kHz				-90		
(\hat{E}_s/N_{oc})	dB	4	4	2	2	-Infinity	-4
RSRP Note 4	dBm/15 kHz	-94	-94	-96	-96	-Infinity	-102
SCH_RP Note 4	dBm/15 kHz	-94	-94	-96	-96	-Infinity	-102
${\sf CRS}\hat{E}_{\sf s}/I_{\sf ot}^{\sf Note5}$	dB	4	2.54	2	0.54	-Infinity	-9.46
SCH $\hat{E}_{_{s}}/I_{_{ot}}$	dB	-0.12	-0.75	-3.45	-3.92	-Infinity	-11.07
Propagation Condition		ETU	J30	ET	U30	ETI	J30
NOTE 4 CONO 1 III						144	

- NOTE 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- NOTE 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.
- NOTE 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. Applies to all subframes.
- NOTE 4: RSRP, SCH_RP, and \hat{E}_s/I_{ot} levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
- NOTE 5: Applies during the restricted measurement subframes configured for neighbour cell (Cell 3) measurements.

A.8.2.6.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for Cell 3, with a measurement reporting delay less than 1000 ms from the beginning of time period T2.

The UE shall not send event-triggered measurement reports as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90% for the tested Event A3.

NOTE: The actual overall delays measured in the tests may be up to $2 \times TTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.2.7 E-UTRAN TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

A.8.2.7.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in clause 8.5.2.1.6.

The test scenario comprises of one E-UTRA TDD carrier and two cells as given in tables A.8.2.7.1-1 and A.8.2.7.1-2. PDCCHs indicating new transmissions should be sent continuously to ensure that the UE would have ACK/NACK sending during identifying a new CGI of E-UTRAN cell. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE.

Table A.8.2.7.1-1: General test parameters for E-UTRAN TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement	As specified in clause A.3.1.1.5
		Channel R.13 TDD	-
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.2
		Channel R.6 TDD	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	Only one TDD carrier frequency is used.
Channel Bandwidth (BWchannel)	MHz	10	
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211. The same configuration in both cells
A3-Offset	dB	-3	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	_
si-RequestForHO		TRUE	As specified in clause 5.5.3.1 in TS 36.331.
T1	S	5	
T2	S	≤10	
T3	S	5	

Table A.8.2.7.1-2: Cell specific test parameters for E-UTRAN TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	T3	T1	T2	Т3
E-UTRA RF Channel			1			1	
Number							
BW _{channel}	MHz	10				10	
Correlation Matrix and			2x1			2x1	
Antenna Configuration							
OCNG Patterns defined in		OP.1	OP.1	OP.1	OP.2	OP.2	OP.2
A.3.2.2.1 (OP.1 TDD) and		TDD	TDD	TDD	TDD	TDD	TDD
in A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB		-3			-3	
SSS_RA	dB						
PCFICH_RB	dB		0		0		
PHICH_RA	dB		-3		-3		
PHICH_RB	dB						
PDCCH_RA	dB		0		0		
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB		-3		-3		
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
\hat{E}_{s}/I_{ot}	dB	8	-3.3	-3.3	-Infinity	2.36	2.36
$N_{oc}^{ m Note2}$	dBm/15 KHz	-9			8		
\hat{E}_s/N_{oc}	dB	8	8	8	-Infinity	11	11
RSRP Note 3	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87
SCH_RP Note3	dBm/15 KHz	-90	-90	-90	-Infinity	-87	-87
Propagation Condition		AWGN					
Timing offset to Cell 1	μs		-			3	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.2.7.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 190 milliseconds from the start of T3.

 $Test\ requirement = RRC\ Procedure\ delay +\ T_{identify\ CGI\ LC-UE,\ intra} + reporting\ delay$

= 15 + 190 + 2ms from the start of T3

= 207 ms, allow 210 ms.

The UE shall be scheduled continuously throughout the test, and from the start of T3 until 190 ms at least 66 ACK/NACK shall be detected as being transmitted by the UE.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The overall 66 ACK/NACK number is caused by two parts. Firstly, at least 54 ACK/NACK shall be sent during identifying the cell global identifier of cell 2 according to the requirement for UL/DL configuration #1 in Table 8.1.2.2.4.1-1 of Clause 8.1.2.2.4.1. Secondly, given that continuous DL data allocation, additional 12 ACK/NACK shall be sent from the start of T3 until 210 ms excludes 190 ms for identifying the cell global identifier of cell 2.

A.8.2.8 E-UTRAN TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

A.8.2.8.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in clause 8.5.2.1.6. The requirement is verified in a DRX configuration.

The test scenario comprises of one E-UTRA TDD carrier and two cells as given in tables A.8.2.8.1-1, A.8.2.8.1-2, A.8.2.8.1-3 and A.8.2.8.1-4. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE.

In the test UE needs to be provided at least once every 1280ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE sends scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

Table A.8.2.8.1-1: General test parameters for E-UTRAN TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.13 TDD	As specified in clause A.3.1.1.5
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	Only one TDD carrier frequency is used.
Channel Bandwidth (BWchannel)	MHz	10	
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211. The same configuration in both cells
A3-Offset	dB	-3	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		ON	DRX related parameters are defined in Table A.8.2.4.1-3
si-RequestForHO		TRUE	As specified in clause 5.5.3.1 in TS 36.331.
T1	S	5	
T2	S	≤30	UE should report cell within 25.6s (20 DRX cycles)
T3	S	5	

Table A.8.2.8.1-2: Cell specific test parameters for E-UTRAN TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	T3	T1	T2	T3
E-UTRA RF Channel		1				1	
Number							
BW _{channel}	MHz		10			10	
Correlation Matrix and			2x1			2x1	
Antenna Configuration							
OCNG Patterns defined in		OP.1	OP.1	OP.1	OP.2	OP.2	OP.2
A.3.2.2.1 (OP.1 TDD) and		TDD	TDD	TDD	TDD	TDD	TDD
in A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB		-3		-3		
SSS_RA	dB						
PCFICH_RB	dB		0		0		
PHICH_RA	dB		-3		-3		
PHICH_RB	dB						
PDCCH_RA	dB		0		0		
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB		-3		-3		
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
\hat{E}_{s}/I_{ot}	dB	8	-3.3	-3.3	-Infinity	2.36	2.36
$N_{oc}^{ m Note~2}$	dBm/15 KHz			-(98		
\hat{E}_s/N_{oc}	dB	8	8	8	-Infinity	11	11
RSRP Note 3	dBm/15 KHz	-90 -90 -90			-Infinity	-87	-87
SCH_RP Note3	dBm/15 KHz	-90 -90 -90			-Infinity	-87	-87
Propagation Condition		AWGN					
Timing offset to Cell 1	แร		-			3	
	And 1. OCNC shall be used such that both calls are fully allocated and a constant total transmitted power anatyral						

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.2.8.1-3: DRX configuration for E-UTRAN TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Field	Value	Comment
onDurationTimer	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table A.8.2.8.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN TDD Intra frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Field	Value	Comment
TimeAlignmentTimer	Infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	2	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.2.8.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

 $Test\ requirement = RRC\ Procedure\ delay +\ T_{identify_CGI_LC-UE,\,intra} + reporting\ delay$

- = 15 + 190 + 2ms from the start of T3
- = 207 ms, allow 210 ms.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.3 E-UTRAN FDD - FDD Inter-frequency Measurements

A.8.3.1 E-UTRAN FDD-FDD Inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells

A.8.3.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the FDD-FDD inter-frequency cell search requirements in clause 8.1.2.3.

The test parameters are given in Tables A.8.3.1.1-1 and A.8.3.1.1-2. In this test, there are two cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.3.1.1-1: General test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
E-UTRA RF Channel Number		1, 2	Two FDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2	Cell 2 is on RF channel number 2
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Time offset between cells		3 ms	Asynchronous cells
T1	S	5	
T2	S	5	

Table A.8.3.1.1-2: Cell specific test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Се	ell 1	C	Cell 2		
		T1	T2	T1	T2		
E-UTRA RF Channel		1			2		
Number							
BW _{channel}	MHz	1	0		10		
Correlation Matrix and		1x2	Low	1x	2 Low		
Antenna Configuration							
OCNG Patterns							
defined in A.3.2.1.1		OP.1	FDD	OP	.2 FDD		
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB			0			
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		_				
PHICH_RB	dB	(0				
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$N_{oc}^{ m Note~3}$	dBm/15 kHz	-98					
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91		
$\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	4	4	-Infinity	7		
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91		
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7		
Propagation Condition				ETU70			

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

A.8.3.1.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 3840 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.3.2 E-UTRAN FDD-FDD Inter-frequency event triggered reporting when DRX is used under fading propagation conditions in asynchronous cells

A.8.3.2.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These test will partly verify the FDD-FDD inter-frequency cell search requirements when DRX is used in clause 8.1.2.3.

The common test parameters are given in Tables A.8.3.2.1-1 and A.8.3.2.1-2. DRX configuration for Test1 and Test2 are given in Table A.8.3.2.1-3 and time alignment timer and scheduling request related parameters in Table A.8.3.2.1-4. In this tests, there are two cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The tests consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.3.2.1-1: General test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Parameter	Unit	Test 1	Test 2	Comment
		Va	lue	
PDSCH parameters		DL Reference Measurement Channel R.0 FDD		As specified in clause A.3.1.1.1 Note that UE may only be allocated at <i>On Duration</i>
PCFICH/PDCCH/PHICH parameters		DL Reference Me Channel R.6 FDD		As specified in clause A.3.1.2.1.
E-UTRA RF Channel Number		1,	2	Two FDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10		
Active cell		Cell 1		Cell 1 is on RF channel number 1
Neighbour cell		Cell 2		Cell 2 is on RF channel number 2
Gap Pattern Id		0		As specified in TS 36.133 clause 8.1.2.1.
A3-Offset	dB	-6		
Hysteresis	dB	0		
CP length		Normal		
TimeToTrigger	S	0		
Filter coefficient		0		L3 filtering is not used
PRACH configuration		4		As specified in table 5.7.1-2 in TS 36.211
Access Barring Information	-	Not Sent		No additional delays in random access procedure.
DRX		ON		DRX related parameters are defined in Table A.8.3.2.1-3
Time offset between cells		3 ms		Asynchronous cells
T1	S	5		
T2	S	5	30	

Table A.8.3.2.1-2: Cell specific test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Се	II 1		Cell 2	
		T1	T2	T1 T2		
E-UTRA RF Channel		1			2	
Number						
BW _{channel}	MHz	1	0		10	
Correlation Matrix and		1x2	Low	1)	<2 Low	
Antenna Configuration						
OCNG Patterns						
defined in A.3.2.1.1		OP.1	FDD	OF	2.2 FDD	
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB			0		
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB		_			
PHICH_RB	dB	(0			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{oc}^{ m Note~2}$	dBm/15 kHz			-98		
RSRP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	-Infinity	7	
SCH_RP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91	
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	-91 7	
Propagation Condition				ETU70		
Note 1: OCNG shall be used	d such that both calls ar	o fully allocated			or enactral dancity is	

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Table A.8.3.2.1-3: drx-Configuration to be used in E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Field	Test1	Test2	Comment	
rieid	Value	Value		
onDurationTimer	psf1	psf1		
drx-InactivityTimer	psf1	psf1		
drx-RetransmissionTimer	psf1	psf1		
longDRX-CycleStartOffset	sf40	sf1280		
shortDRX	disable	disable		
Note: For further information see clause 6.3.2 in TS 36.331.				

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.3.2.1-4: *TimeAlignmentTimer* and *sr-ConfigIndex* -Configuration to be used in E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Field	Test1	Test2	Comment
riela	Value	Value	
TimeAlianmentTimer	of500	sf500	For further information see
TimeAlignmentTimer	sf500	\$1500	clause 6.3.2 in TS 36.331.
			For further information see
sr-ConfigIndex	0	0	clause 6.3.2 in TS 36.331 and
-			section10.1 in TS 36.213

A.8.3.2.2 Test Requirements

In Test1 the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 3840 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE send the measurement report on PUSCH.

In Test2 the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 20*1280ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report

A.8.3.3 E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions in asynchronous cells with DRX when L3 filtering is used

A.8.3.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event in DRX when L3 filtering is used. This test will partly verify the FDD-FDD inter-frequency cell search in DRX requirements in clause 8.1.2.3.1.2 and the UE behaviour with the *filterCoefficent* defined in TS 36.331 [2].

The test parameters are given in Tables A.8.3.3.1-1, A.8.3.3.1-2, A.8.3.3.1-3 and A.8.3.3.1-4. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 and the filter coefficient is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. In this test, there are two cells on different carrier frequencies and gap pattern configuration # 1 as defined in Table 8.1.2.1-1 is provided.

The uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

Table A.8.3.3.1-1: General test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions in asynchronous cells with DRX when L3 filtering is used

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1, 2	Two FDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Gap Pattern Id		1	As specified in TS 36.133 clause 8.1.2.1.
Neighbour A3-Offset Ofn	dB	-14	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		9	L3 filtering is used
DRX		ON	DRX related parameters are defined in Table A.8.3.3.1-3
Time offset between cells		3 ms	Asynchronous cells
T1	S	30	
T2	S	9	

Table A.8.3.3.1-2: Cell specific test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions in asynchronous cells with DRX when L3 filtering is used

Parameter	Unit		Cell 1		Cell 2		
		T1		T2	T1	T2	
E-UTRA RF Channel			1		2		
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns							
defined in A.3.2.1.1			OP.1 FDD		OP.2 FDD		
(OP.1 FDD) and in		`	01.11.00	,	Or .2 1 DD		
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB				0		
PHICH_RB	dB		0				
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
${ m \hat{E}}_{ m s}/{ m I}_{ m ot}$	dB	4	4		4	24	
$N_{oc}^{$	dBm/15 KHz	-98					
\hat{E}_s/N_{oc}	dB	4	4		4	24	
RSRP Note 3	dBm/15 KHz	-94	-94		-94	-74	
SCH_RP Note 3	dBm/15 KHz	-94	-94		-94	-74	
Propagation Condition		AWGN	•		•	•	

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Table A.8.3.3.1-3: DRX-Configuration for E-UTRAN FDD-FDD inter-frequency event triggered reporting in DRX under AWGN propagation conditions in asynchronous cells with DRX when L3 filtering is used

Field	Value	Comment
onDurationTimer	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.3.3.1-4: TimeAlignmentTimer - Configuration for E-UTRAN FDD-FDD inter-frequency event triggered reporting in DRX under AWGN propagation conditions in asynchronous cells with DRX when L3 filtering is used

Field	Value Comment			
TimeAlignmentTimer	sf500	As specified in clause 6.3.2 in TS		
TimeAlignmentTimer	\$1500	36.331		
		For further information see		
sr-ConfigIndex	0	clause 6.3.2 in TS 36.331 and		
		section10.1 in TS 36.213.		

A.8.3.3.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 6400 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

A.8.3.4 E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

A.8.3.4.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in clause 8.1.2.3.5.

The test scenario comprises of two E-UTRA FDD carriers and one cell on each carrier as given in tables A.8.3.4.1-1 and A.8.3.4.1-2. PDCCHs indicating new transmissions shall be sent continuously to ensure that the UE would have ACK/NACK sending during identifying a new CGI of E-UTRAN cell. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-frequency monitoring.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE. Measurement gaps shall be deconfigured before the start of T3.

Table A.8.3.4.1-1: General test parameters for E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.3 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
E-UTRA RF channel number		1, 2	Two FDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1.
Neighbour cell		Cell 2	Cell 1 is on RF channel number 2.
CP length		Normal	
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
si-RequestForHO		TRUE	As specified in clause 5.5.3.1 in TS 36.331.
Time offset between cells	ms	3	Asynchronous cells
T1	S	5	
T2	S	≤10	
T3	s	5	

Table A.8.3.4.1-2: Cell specific test parameters for E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Parameter	Unit	Cell 1		Cell 2				
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel		1			2			
Number								
BW _{channel}	MHz		10		10			
OCNG Patterns defined in		OP.10	OP.10	OP.10	OP.2	OP.2	OP.2	
A.3.2.1.10 (OP.10 FDD)		FDD	FDD	FDD	FDD	FDD	FDD	
and in A.3.2.1.2 (OP.2								
FDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB		_					
PHICH_RA	dB		0		0			
PHICH_PB	dB							
PDCCH_RA	dB							
PDCCH_PB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							

$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	4	-Infinity	7	7
$N_{oc}^{ m Note~2}$	dBm/15 KHz	-98					
\hat{E}_s/N_{oc}	dB	4	4	4	-Infinity	7	7
RSRP Note 3	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91
SCH_RP Note3	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91
Propagation Condition		AWGN	•	•	•		

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.3.4.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

Test requirement = RRC Procedure delay + $T_{identify CGI, inter}$ + reporting delay

- = 15 + 150 + 2ms from the start of T3
- = 167 ms, allow 170 ms.

The UE shall be scheduled continuously throughout the test, and from the start of T3 until 170 ms at least 80 ACK/NACK shall be detected as being transmitted by the UE.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The overall 80 ACK/NACK number is caused by two parts. Firstly, at least 60 ACK/NACK shall be sent during identifying the cell global identifier of cell 2 according to the requirement in Clause 8.1.2.3.5.1. Secondly, given that continuous DL data allocation, and the measurement gaps have been deconfigured before the start of T3, additional 20 ACK/NACK shall be sent from the start of T3 until 170 ms excludes 150 ms for identifying the cell global identifier of cell 2.

A.8.3.5 E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in clause 8.1.2.3.5. The requirement is verified in a DRX configuration.

The test scenario comprises of two E-UTRA FDD carriers and one cell on each carrier as given in tables A.8.3.5.1-1, A.8.3.5.1-2, A.8.3.5.1-3 and A.8.3.5.1-4. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-frequency monitoring.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE. Measurement gaps shall be deconfigured before the start of T3.

In the test UE needs to be provided at least once every 1280ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE sends scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

Table A.8.3.5.1-1: General test parameters for E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Parameter	Unit	Value	Comment			
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1			
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1			
E-UTRA RF channel number		1, 2	Two FDD carrier frequencies are used.			
Channel Bandwidth (BW _{channel})	MHz	10				
Active cell		Cell 1	Cell 1 is on RF channel number 1.			
Neighbour cell		Cell 2	Cell 1 is on RF channel number 2.			
CP length		Normal				
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.			
A3-Offset	dB	-6				
Hysteresis	dB	0				
TimeToTrigger	S	0				
Filter coefficient		0	L3 filtering is not used			
DRX		ON	DRX related parameters are defined in Table A.8.3.5.1-3			
si-RequestForHO		TRUE	As specified in clause 5.5.3.1 in TS 36.331.			
Time offset between cells	ms	3	Asynchronous cells			
T1	s	5				
T2	S	≤30	UE shall report cell within 25.6s (20 DRX cycles)			
T3	s	5				

Table A.8.3.5.1-2: Cell specific test parameters for E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Parameter	Unit	Cell 1			Cell 2			
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel			1		2			
Number								
BW _{channel}	MHz		10			10		
OCNG Patterns defined in		OP.1	OP.1	OP.1	OP.2	OP.2	OP.2	
A.3.2.1.1 (OP.1 FDD) and		FDD	FDD	FDD	FDD	FDD	FDD	
in A.3.2.1.2 (OP.2 FDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB		_			0		
PHICH_RA	dB		0					
PHICH_PB	dB							
PDCCH_RA	dB							
PDCCH_PB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							

\hat{E}_{s}/I_{ot}	dB	4	4	4	-Infinity	7	7
N_{oc} Note 2	dBm/15 KHz	-98	•	•			
\hat{E}_s/N_{oc}	dB	4	4	4	-Infinity	7	7
RSRP Note 3	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91
SCH_RP Note3	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91
Propagation Condition		AWGN	•		•		•

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.3.5.1-3: DRX configuration for E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Field	Value	Comment
onDurationTimer	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table A.8.3.5.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Field	Value	Comment
TimeAlignmentTimer	Infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.3.5.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

Test requirement = RRC Procedure delay + $T_{identify_CGI, inter}$ + reporting delay

= 15 + 150 + 2ms from the start of T3

= 167 ms, allow 170 ms.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.3.6 E-UTRAN FDD-FDD Inter-frequency event triggered reporting without measurement gaps under AWGN propagation conditions in asynchronous cells

A.8.3.6.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event without measurement gaps. This test will partly verify the FDD-FDD inter-frequency cell search requirements in section 8.1.2.3.

The test parameters are given in Tables A.8.3.6.1-1 and A.8.3.6.1-2. In this test, there are two cells on different carrier frequencies and no gaps are configured in this test. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. PDCCH on the PCell shall be sent continuously to ensure that the UE sends ACK/NACKs throughout the test.

Table A.8.3.6.1-1: General test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting without measurement gaps

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.3 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
E-UTRA RF Channel Number		1, 2	Two FDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Active PCell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2	Cell 2 is on RF channel number 2
A3-Offset	dB	-6	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Time offset between cells		3 ms	Asynchronous cells
T1	S	5	
T2	S	5	

Table A.8.3.6.1-2: Cell specific test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting without measurement gaps

Parameter	Unit	С	ell 1	С	ell 2	
		T1	T2	T1	T2	
E-UTRA RF Channel			1		2	
Number						
BW _{channel}	MHz		10		10	
OCNG Patterns						
defined in A.3.2.1.10		OP.	I0 FDD	OP.	2 FDD	
(OP.10 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB			0		
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB		_			
PHICH_RB	dB		0			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
N_{oc} Note 2	dBm/15 kHz			-98		
RSRP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4 4		-Infinity	7	
SCH_RP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91	
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7	
Propagation Condition				AWGN		
Note 1: OCNG shall be	e used such that both	n cells are full	allocated and	a constant total tra	nsmitted power	

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.3.6.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 3840 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The UE shall send continuous ACK/NACK throughout the test, and from the start of T2 until Event A3 is reported, at least 85% ACK/NACK shall be detected.

For a test to be considered successful requirements on both event detection and percentage of transmitted ACK/NACKs have to be fulfilled simultaneously. The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.3.7 E-UTRAN FDD-FDD Inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells for Increased Carrier Monitoring without Reduced Performance Group

A.8.3.7.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the FDD-FDD inter-frequency cell search requirements in clause 8.1.2.3.

The test parameters are given in Tables A.8.3.1.1-1 and A.8.3.1.1-2. In this test, there are four cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cells 2, 3 or 4.

Table A.8.3.7.1-1: General test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
UE configured E-UTRA RF		1, 2,3,4,5,6,7,8,9	Serving cell and eight FDD carrier
Channel Number			frequencies are used in the UE neighbour
			cell list.
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cells		Cell 2, Cell 3, Cell 4	Cells 2, 3, 4 are randomly selected to use
			different frequencies selected from
			frequencies 2,3,4,5,6,7,8,9
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
Reduced Performance	-	8	
Group Scaling factor			
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
T1	S	5	
T2	S	40	

Table A.8.3.7.1-2: Cell specific test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells (Cell # 1 and Cell # 2)

Parameter	Unit	Ce	Cell 1 Cell 2		Cell 2
		T1	T2	T1	T2
E-UTRA RF Channel		,	1		selected from
Number					such that cell 2 is
BW _{channel}	MHz	5MHz: N	N _{RB} = 25		erformance group : N _{RB,} = 25
DVV channel	IVII IZ		$N_{RB} = 25$ $N_{RB} = 50$: N _{RB,} = 25 2: N _{RB,} = 50
Measurement			10-15		z: 10-15
bandwidth	n_{PRB}		:: 22-27		lz: 22-27
	PRB				
PDSCH Reference		5MHz: F	R.5 FDD		-
measurement channel		10MHz:	R.0 FDD		
defined in A.3.1.1.					
PDSCH allocation	n_{PRB}		:: 7-17		-
DDCCH/DCEICH/DL!IC	PKB		:: 13-36	CALL-	D 44 EDD
PDCCH/PCFICH/PHIC H Reference			k.11 FDD R.6 FDD		R.11 FDD :: R.6 FDD
measurement channel		ι ΟινίΠΖ.	N.0 FDD	IOIVITIZ	N.0 FDD
defined in A.3.1.2.					
OCNG Patterns		5MHz: OI	P.15 FDD	5MHz: (OP.16 FDD
defined in A.3.2.			OP.1 FDD		OP.2 FDD
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB	_			
PCFICH_RB	dB				
PHICH_RA	dB	,	2		0
PHICH_RB	dB)		0
PDCCH_RA	dB	=			
PDCCH_RB	dB	-			
PDSCH_RA	dB				
PDSCH_RB OCNG_RA ^{Note 1}	dB dB				
OCNG_RB ^{Note 1}	dB	1			
N _{oc} Note 3	dBm/15 kHz	-9	98		-98
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	dB	4	4	-Infinity	7
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91
SCH RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91
lo ^{Note 4}	dBm/ BW _{channel}	-	-	-	-
		64.76+10log(N _{RB,0} /50) 64.76+10log(N _{RB,0} /50)		70.22+10log(N _{RB,0} /50)	62.43+10log(N _R _{B,} √50)
Propagation Condition			J70	E.	TU70
Correlation Matrix and		1x2	Low	1x	2 Low
Antenna Configuration					
Timing offset to cell 1	ms		-		3

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.

Note 4: Es/lot, RSRP, SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.3.7.1-3: Cell specific test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells (Cell # 3 and Cell # 4)

Parameter	Unit	Се	II 3	Cell 4		
		T1	T2	T1	T2	
E-UTRA RF Channel Number		Randomly selected from 2,3,4,5,6,7,8 such that cell 3 is in the normal performance group		2,3,4,5,6,7,8	selected from such that cell 4 is performance group	
BW _{channel}	MHz	5MHz: N	N _{RB} = 25 N _{RB} = 50		: N _{RB,} = 25 z: N _{RB,} = 50	
Measurement bandwidth	$n_{{\scriptscriptstyle PRB}}$	5MHz:	: 10-15 :: 22-27	5MH	z: 10-15 Iz: 22-27	
PDSCH Reference measurement channel defined in A.3.1.1.			-		-	
PDSCH allocation	$n_{{\it PRB}}$,	-		-	
PDCCH/PCFICH/PHIC H Reference measurement channel defined in A.3.1.2.			1.11 FDD R.6 FDD		R.11 FDD :: R.6 FDD	
OCNG Patterns		5MHz: OI	P.16 FDD	5MHz: (OP.16 FDD	
defined in A.3.2.		10MHz: 0	P.2 FDD	10MHz: OP.2 FDD		
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB	,	2	0		
PHICH_RB	dB	()		0	
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{oc}^{ m Note 3}$	dBm/15 kHz		98		-98	
\hat{E}_s/N_{oc}	dB	-Infinity	7	-Infinity	7	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	-Infinity	7	-Infinity	7	
RSRP Note 4	dBm/15 kHz	-Infinity	-91	-Infinity	-91	
SCH_RP Note 4	dBm/15 kHz	-Infinity	-91	-Infinity	-91	
lo ^{Note 4}	dBm/ BW _{channel}	- 70.22+10log(N _{RB,c} /50)	- 62.43+10log(N _{RB,0} /50)	- 70.22+10log(N _{RB,} /50)	- 62.43+10log(N _R _{B,} √50)	
Propagation Condition		ETU70			TU70	
Correlation Matrix and		1x2 Low			2 Low	
Antenna Configuration						
Timing offset to cell 1	ms	;	3		3	
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power						

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.

Note 4: Es/lot, RSRP, SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.3.7.2 Test Requirements

The UE shall send Event A3 triggered measurement reports for cells 2, 3 and 4, with a measurement reporting delay less than 30.72s from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.3.8 FDD-FDD Interfrequency correct reporting of measurement events with reduced performance group configured, non DRX

A.8.3.8.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the FDD-FDD inter-frequency cell measurement requirements for increased UE carrier monitoring in clause 8.1.2.3.

The test parameters are given in Tables A.8.3.8.1-1, A.8.3.8.1-2 and A.8.3.8.1-3. In this test, there are 4 cells on different carrier frequencies and gap pattern configuration #0 as defined in table A.8.3.8.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Events A3 is used. The test consists of two successive time periods for every reptitation, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of neighoubour cells. At the start of each repetition of T1, the test equipment provides signals for cell 1 (serving cell), and cells 2, 3 and 4 which are selected from the 8 cells which are configured in the UE neighbour cell list. Cells 2, 3 and 4 are chosen randomly, such that one frequency belongs to the normal performance group and two frequencies belong to the reduced performance group.

Table A.8.3.8.1-1: General test parameters for FDD-FDD Interfrequency correct reporting of measurement events with reduced performance group configured, non DRX

Parameter	Unit	Value	Comment
UE configured E-UTRA RF Channel Number		1,2,3,4,5,6,7,8,9	Serving cell and 8 FDD carrier frequencies are used in the UE neighbour cell list. Frequencies 5,6,7,8 and 9 are indicated to have reduced performance
Test equipment configuration		Cell 1 uses E-UTRA RF cannel number 1 Cell 2,3,4 are randomly selected to use different frequencies selected from frequencies 2,3,4,5,6,7,8,9	
Active cell		Cell 1	Cell 1 is on RF channel number 1
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Scaling factor configurations		8	As specified in TS 36.133 clause 8.1.2.1.1a
T1	S	5	
T2	S	155	

Table A.8.3.8.1-2: Cell specific test parameters for FDD-FDD Interfrequency correct reporting of measurement events with reduced performance group configured, non DRX (cell #1, cell #2)

Unit		II 1	Cell 2	
	T1	T2	T1	T2
	,	1	Randomly sel	ected from 2,3,4
			such that cell	2 is in the normal
			performance group	
	5MHz: N	$N_{RB} = 25$	5MHz:	N _{RB.} = 25
		$10MHz: N_{RB} = 50$: N _{RB,} = 50
				R.5 FDD
	10MHz:I	R.0 FDD	10MHz	::R.0 FDD
	5MHz: R	11 FDD	5MHz:	R.11 FDD
	10MHz:I	R.6 FDD	10MHz	::R.6 FDD
	5MHz: OI	P.15 FDD	5MHz: C	OP.16.FDD
	10MHz:C	P.1 FDD	10MHz:	OP.2 FDD
dB				
	()		0
	1			
dBm/15 kHz	-6	98		-98
dB	4	4	-Infinity	7
dB	4	4	-Infinity	7
	•	•	•	·
				-91
				-91
dBm/Ch BW			-	-62.43
				+10log
				(N _{RB,c} /50)
			AWGN	
	1)	(2		1x2
		=] 3	Bms
		5MHz: N 10MHz: I 10MHz: I 10MHz: I 10MHz: I 10MHz: I 5MHz: R 10MHz: I 5MHz: CI 10MHz: I 10MHz:	5MHz: N _{RB} = 25 10MHz: N _{RB} = 50 5MHz: R.5 FDD 10MHz:R.0 FDD 5MHz: R.11 FDD 10MHz:R.6 FDD 5MHz: OP.15 FDD 10MHz:OP.1 FDD dB dB dB dB dB dB dB dB dB dB	1

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: Es/lot, RSRP, SCH_RP and lo have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant

Table A.8.3.8.1-3: Cell specific test parameters for FDD-FDD Interfrequency correct reporting of measurement events with reduced performance group configured, non DRX (cell #3, cell #4)

Parameter	Unit	Ce	II 3	Cell 4		
	İ	T1	T2	T1	T2	
E-UTRA RF Channel Number		5,6,7,8,9 sucl in the r	elected from h that cell 3 is reduced nce group	Randomly selected from 5,6,7,8,9 such that cell 4 is in the reduced performance group. Cell 4 RF channel is different from Cell 3 RF channel.		
BW _{channel}			$N_{RB} = 25$ $N_{RB} = 50$		N _{RB,} = 25 : N _{RB,} = 50	
PDSCH parameters: DL Reference Measurement Channel As specified in clause A.3.1.1.1			R.5 FDD R.0 FDD		R.5 FDD ::R.0 FDD	
PCFICH/PDCCH/PHIC H parameters: DL Reference Measurement Channel As specified in clause A.3.1.2.1			R.11 FDD R.6 FDD		R.11 FDD ::R.6 FDD	
OCNG Patterns defined in A.3.2.1.2 and A.3.2.1.16			P.16.FDD)P.2 FDD		DP.16.FDD OP.2 FDD	
PBCH_RA PBCH_RB	dB dB					
PSS_RA	dB	-				
SSS_RA	dB	-				
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	-	0		0	
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB	_				
OCNG_RB ^{Note 1}	dB					
N_{oc} Note 3	dBm/15 kHz	-6	98		-98	
\hat{E}_s/N_{oc}	dB	-Infinity	7	-Infinity	7	
$\hat{ ext{E}}_{ ext{s}}/ ext{I}_{ ext{ot}}^{ ext{ Note 4}}$	dB	-Infinity	7	-Infinity	7	
INDIN	dBm/15 kHz	-Infinity	-91	-Infinity	-91	
SCH RP Note 4	dBm/15 kHz	-Infinity	-91	-Infinity	-91	
lo Note 4	dBm/Ch BW	-70.22 -62.43 +10log +10log (N _{RB,c} /50) (N _{RB,c} /50)		-70.22 +10log (N _{RB,c} /50)	-62.43 +10log (N _{RB,c} /50)	
Propagation Condition	<u> </u>	AW	/GN		WGN	
Antenna Configuration		1:	x2		1x2	
Timing offset to Cell 1	<u></u>	3r	ms	3	Bms	
Note 1. OCNG shall be used such that both cells are fully allocated and a constant total transmitted nower						

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: Es/lot, RSRP, SCH_RP and lo have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled

A.8.3.8.2 Test Requirements

The UE shall send Event A3 triggered measurement reports for cells 2, 3 and 4, with a measurement reporting delay less than 13.17s (cell 2) and 153.6s (cell 3 and 4) from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report.

A.8.3.9 FDD-FDD Inter-frequency correct reporting of measurement events with reduced performance group configured, DRX

A.8.3.9.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event in DRX. This test will partly verify the FDD-FDD inter-frequency cell search requirements when DRX is used in clause 8.1.2.3.

The test parameters are given in Tables A.8.3.9.1-1, A.8.3.9.1-2, A.8.3.9.1-3 and A.8.3.9.1-4. In this test, there are four cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

The UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle..

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2, 3 or 4. At the start of each repetition of T1, the test equipment provides signals for cell 1 (serving cell), and cells 2, 3 and 4 which are selected from the 8 cells on different frequencies which are configured in the UE neighbour cell list. Cells 2, 3 and 4 are chosen randomly, such that one frequency belongs to the normal performance group and two frequencies belong to the reduced performance group.

Table A.8.3.9.1-1: General test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting for IncMon

Parameter	Unit	Value	Comment
UE configured E-UTRA RF Channel Number		1, 2,3,4,5,6,7,8,9	Serving cell and eight FDD carrier frequencies are used in the UE neighbour cell list. Frequencies 5,6,7,8 and 9 are indicated to have reduced performance
Test equipment configuration		Cell 1,2,3,4	Cell 1 uses E-UTRA RF channel number 1 Cells 2 are randomly selected to use different frequencies selected from E-UTRA frequencies 2, 3, 4. Cells 3, 4 are randomly selected to use different frequencies selected from E-UTRA frequencies 5, 6, 7, 8, 9.
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cells		Cell 2,3,4	
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
A3-Offset	dB	-5	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		ON	DRX related parameters are defined in Table A.8.3.9.1-3
Scaling factor for reduced performance group		8	
T1	S	5	
T2	S	155	

Table A.8.3.9.1-2: Cell specific test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting for IncMon

Parameter	Unit	Се	II 1	Cell 2		Ce	Cell 3		Cell 4	
		T1	T2	T1	T2	T1	T2	T1	T2	
E-UTRA RF Channel		,	1		Randomly selected from 2,3,4		ected from 5, 6,	Randomly selected from 5, 6,		
Number				such that cell 2 is in the normal		7, 8, 9 such that cell 3 is in the		7, 8, 9 such that cell 4 is in the		
01 15 1:11	N.41.1	51411	IDD 05		nce group		ormance group	reduced performance group		
Channel Bandwidth (BW _{channel})	MHz		IRB = 25 NRB = 50		NRB,= 25 NRB,= 50		NRB = 25 NRB = 50	5MHz: NRB,= 25 10MHz: NRB,= 50		
PDSCH parameters as			R.5 FDD		R.5 FDD		R.5 FDD		R.5 FDD	
specified in clause			R.0 FDD		R.0 FDD		R.0 FDD		R.0 FDD	
A.3.1.1.1			-			-			-	
PCFICH/PDCCH/PHICH			R.11 FDD	5MHz: F	R.11 FDD	5MHz: F	R.11 FDD	5MHz: R	1.11 FDD	
parameters as specified		10MHz:	R.6 FDD	10MHz:	R.6 FDD	10MHz:	R.6 FDD	10MHz:	R.6 FDD	
in clause A.3.1.2.1										
OCNG Patterns defined			P.15 FDD		P.16 FDD		P.16 FDD		P.16 FDD	
in A.3.2.1 PBCH_RA	dB	TUMHZ: C	OP.1 FDD	TOMHZ: 0	OP.2 FDD	TUIVIHZ: (OP.2 FDD	TOMHZ: C	DP.2 FDD	
PBCH_RB	dB	-								
PSS_RA	dB	-								
SSS_RA	dB									
PCFICH_RB	dB									
PHICH_RA	dB	-								
PHICH RB	dB		0 0 0		Λ	0				
PDCCH_RA	dB	`			Ŭ .					
PDCCH_RB	dB	1		!						
PDSCH_RA	dB	1								
PDSCH_RB	dB									
OCNG_RA ^{Note 1}	dB	-								
OCNG_RB ^{Note 1}	dB	-								
Noc Note 3	dBm/15 kHz	-9	98	-9	98	-98		-98		
			I		T		T		I	
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4	-Infinity	4	-Infinity	4	
$\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$ Note 4	dB	4	4	-Infinity	4	-Infinity	4	-Infinity	4	
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-94	-Infinity	-94	-Infinity	-94	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-94	-Infinity	-94	-Infinity	-94	
lo Note 4	dBm/Ch BW	-64.76+10log	-64.76+10log	-70.22+10log	-64.76+10log	-70.22+10log	-64.76+10log	-70.22+10log	-64.76+10log	
		(N _{RB,c} /50) (N _{RB,c} /50)		(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	
Propagation Condition		AWGN		AWGN		AWGN		AWGN		
Antenna Configuration		1:	x2		x2	1x2			x2	
Time offset to cell1	ms	,	-		3	3		3		

- Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.
- Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
- Note 4: E_s/I_{ot}, RSRP, SCH_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.3.9.1-3: drx-Configuration to be used in E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used for IncMon

Field	Value	Comment		
onDurationTimer	psf1			
drx-InactivityTimer	psf1			
drx-RetransmissionTimer	psf1			
longDRX-CycleStartOffset	sf160			
shortDRX	disable			
Note: For further information see clause 6.3.2 in TS 36.331.				

Table A.8.3.9.1-4: *TimeAlignmentTimer* and *sr-ConfigIndex* Configuration to be used in E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used for IncMon

Field	Value	Comment
TimeAlignmentTimer	sf500	For further information see clause 6.3.2 in TS 36.331.
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213

A.8.3.9.2 Test Requirements

The UE shall send Event A3 triggered measurement reports for cells 2, 3 and 4, with a measurement reporting delay less than 13.2s (cell 2) and 153.6s (cell 3 and 4) from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report.

Where:

When DRX cycle is 160ms, the delay requirement of cell identification and measurement period are specified in section 8.1.2.3.1.2 and Non DRX Requirements in clause 8.1.2.3.1.1 are applicable.

The requirement of inter frequency cell identification delay are specified as

$$\mathbf{T}_{\text{Identify_Inter}} = \mathbf{T}_{\text{Basic_Identify_Inter}} \cdot \frac{480}{\mathbf{T}_{\text{Inter1}}} \cdot N_{\textit{freq},n} \cdot K_{\textit{n}} \quad \textit{ms} \, (\text{normal performance}) \, \text{and} \, \frac{1}{2} \left(\frac{1}{2} \sum_{i=1}^{n} \frac{1}{2} \sum_{i=1}^$$

$$T_{\text{Identify_Inter}} = T_{\text{Basic_Identify_Inter}} \cdot \frac{480}{T_{\text{Inter}}} \cdot N_{freq,r} \cdot K_r \quad \textit{ms} \, (\text{reduced performance})$$

T_{Basic_Identify_inter} 480ms, See section 8.1.2.3.1.1

T_{Inter1} 60ms, See section 8.1.2.1

 $N_{freq,n}$ and $N_{freq,r}$ 3 and 5 set in this test case.

 K_n and K_r 8/7 and 8, See section 8.1.2.1.1a.

This gives 13165.7ms for cells 2 on normal carrier, and 153600ms for cell 3 and cell 4 on reduced carriers for Event A3 triggered measurement reporting delay. The test requirements allow 13.2s and 153.6s.

A.8.4 E-UTRAN TDD - TDD Inter-frequency Measurements

A.8.4.1 E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

A.8.4.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the TDD-TDD inter-frequency cell search requirements in clause 8.1.2.3.4.

The test parameters are given in Table A.8.4.1.1-1 and A.8.4.1.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.4.1.1-1: General test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
		DL Reference Measurement	
PDSCH parameters		Channel R.0 TDD	As specified in clause A.3.1.1.2
		DL Reference Measurement	
PCFICH/PDCCH/PHICH		Channel R.6 TDD	As specified in clause A.3.1.2.2
parameters			
Gap Pattern Id		1	As specified in TS 36.133 clause 8.1.2.1.
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211.
			The same configuration in both cells
Uplink-downlink configuration		1	As specified in TS 36.211 clause 4.2 Table
			4.2-2
CP length		Normal	
E-UTRA RF Channel Number		1, 2	Two TDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2	Cell 2 is on RF channel number 2
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Time offset between cells		3 μs	Synchronous cells
T1	S	5	
T2	s	10	

Table A.8.4.1.1-2: Cell specific test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Ce	II 1	Ce	II 2	
		T1	T2	T1	T2	
E-UTRA RF Channel		1		2	2	
Number						
BW _{channel}	MHz	10		1	0	
Correlation Matrix and		1x2	Low	1x2	Low	
Antenna Configuration						
OCNG Pattern defined						
in A.3.2.2.1 (OP.1		OP.1	TDD	OP.2	TDD	
TDD) and in A.3.2.2.2						
(OP.2)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB			0		
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB	_				
PHICH_RB	dB	()			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	-Infinity	7	
$N_{oc}^{ m Note~3}$	dBm/15 kHz			-98		
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-infinity	-91	
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7	
Propagation Condition				TU70		

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission are assigned to the UE priori to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.4.1.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.4.2 E-UTRAN TDD-TDD Inter-frequency event triggered reporting when DRX is used under fading propagation conditions in synchronous cells

A.8.4.2.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These test will partly verify the TDD-TDD inter-frequency cell search requirements when DRX is used in clause 8.1.2.3.

The common test parameters are given in Tables A.8.4.2.1-1 and A.8.4.2.1-2. DRX configuration for Test1 and Test2 are given in Table A.8.4.2.1-3 and time alignment timer and scheduling request related parameters in Table A.8.4.2.1-4. In these tests, there are two cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignmend. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The tests consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.4.2.1-1: General test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Unit	Test 1	Test 2	Comment		
	Value				
	DL Reference Me	easurement	As specified in clause A.3.1.1.2. Note that		
	Channel R.0 TDD		Channel R.0 TDD		UE may only be allocated at On Duration
	DL Reference Measurement		As specified in clause A.3.1.2.2.		
	Channel R.6 TDD)			
	1, 2		1, 2		Two TDD carrier frequencies are used.
MHz	10				
	Cell 1		Cell 1 is on RF channel number 1		
	Cell 2		Cell 2 is on RF channel number 2		
	0		0		As specified in TS 36.133 clause 8.1.2.1.
	1		1 As specified in TS 36.211 cla		As specified in TS 36.211 clause 4.2 Table
			4.2-2		
	6		As specified in table 4.2-1 in TS 36.211.		
			The same configuration in both cells		
dB	-6				
dB	0				
	Normal				
S	0				
	0		L3 filtering is not used		
	4		As specified in table 5.7.1-3 in TS 36.211		
-	Not Sent		No additional delays in random access		
			procedure.		
	ON		DRX related parameters are defined in Table A.8.4.2.1-3		
	3 us		Synchronous cells		
S					
S	5	30			
	MHz dB dB s	Va	Value DL Reference Measurement Channel R.0 TDD DL Reference Measurement Channel R.6 TDD 1, 2 MHz 10 Cell 1 Cell 2 0 1 6 dB -6 dB 0 Normal s 0 0 4 Normal s Normal s 0 0 4 Not Sent ON 3 μs s 5		

Table A.8.4.2.1-2: Cell specific test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Се	II 1		Cell 2	
		T1	T2	T1	T2	
E-UTRA RF Channel		1		2		
Number						
BW _{channel}	MHz	10			10	
Correlation Matrix and		1x2	Low	1)	<2 Low	
Antenna Configuration						
OCNG Patterns						
defined in A.3.2.2.1		OP.1	TDD	OF	P.2 TDD	
(OP.1 TDD) and in						
A.3.2.2.2 (OP.2 TDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB			0		
PHICH_RA	dB		_			
PHICH_RB	dB	()			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{oc}^{ m Note~2}$	dBm/15 kHz	-98				
RSRP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	-Infinity	7	
SCH_RP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91	
\hat{E}_s/N_{oc}	dB	4 4		-Infinity	-91 7	
Propagation Condition				TU70		
Note 1: OCNG shall be used	d such that both calls ar	a fully allocated	and a constant to	tal transmitted now	or epoctral dancity is	

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Table A.8.4.2.1-3: drx-Configuration to be used in E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Field	Test1	Test2	Comment
rieid	Value	Value	
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.4.2.1-4: *TimeAlignmentTimer* and *sr-ConfigIndex* -Configuration to be used in E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Field	Test1	Test2	Comment
Field	Value	Value	
TimeAlianmentTimer	sf500	sf500	For further information see
TimeAlignmentTimer	81500	81500	clause 6.3.2 in TS 36.331.
			For further information see
sr-ConfigIndex	2	2	clause 6.3.2 in TS 36.331 and 10.1
-			in TS 36.213.

A.8.4.2.2 Test Requirements

In Test1 the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 3840 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE send the measurement report on PUSCH.

In Test2 the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 20*1280ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

A.8.4.3 E-UTRAN TDD-TDD inter-frequency event triggered reporting under AWGN propagation conditions in synchronous cells with DRX when L3 filtering is used

A.8.4.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event in DRX when L3 filtering is used. This test will partly verify the TDD-TDD inter-frequency cell search in DRX requirements in clause 8.1.2.3.2.2 and the UE behaviour with the filterCoefficent defined in TS 36.331 [2].

The test parameters are given in Tables A.8.4.3.1-1, A.8.4.3.1-2, A.8.4.3.1-3 and A.8.4.3.1-4. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 and the filter coefficient is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. In this test, there are two cells on different carrier frequencies and gap pattern configuration # 1 as defined in Table 8.1.2.1-1 is provided.

The uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

Table A.8.4.3.1-1: General test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement	As specified in clause A.3.1.1.2
		Channel R.0 TDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.2
parameters		Channel R.6 TDD	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1, 2	Two TDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Time offset between cells	μs	3	synchronous cells
Gap Pattern Id		1	As specified in TS 36.133
			clause 8.1.2.1.
Uplink-downlink configuration		1	As specified in table 4.2.2 in TS
of cells			36.211
Special subframe configuration		6	As specified in table 4.2.1 in TS
of cells			36.211
Neighbour A3-Offset Ofn	dB	-14	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		9	L3 filtering is used
DRX		ON	DRX related parameters are defined
			in Table A.8.4.3.1-3
T1	S	30	
T2	S	9	

Table A.8.4.3.1-2: Cell specific test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used

Parameter	Unit	Ce	ell 1	Ce	Cell 2		
		T1	T2	T1	T2		
E-UTRA RF Channel Number		1		2			
BW _{channel}	MHz	1	0	1	0		
OCNG Patterns defined in A.3.2.2.1 (OP.1		OP.1	TDD	OP.2	TDD		
TDD) and in A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB	0		0			
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	4	24		
$N_{oc}^{$	dBm/15 KHz		-!	98			
\hat{E}_s/N_{oc}	dB	4	4	4	24		
RSRP Note 3	dBm/15 KHz	-94	-94	-94	-74		
SCH_RP Note 3	dBm/15 KHz	-94	-94	-94	-74		
Propagation Condition			AV	/GN	•		
Note 1: OCNG shall be used such that bo	th cells are fully all	ocated and	a constant to	otal transmitt	ed power		
spectral density is achieved for all					•		

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{\it oc}$ to be

RSRP and SCH_RP levels have been derived from other parameters for information purposes. They Note 3: are not settable parameters themselves.

Table A.8.4.3.1-3: DRX-Configuration for E-UTRAN TDD-TDD inter-frequency event triggered reporting in DRX under AWGN propagation conditions with DRX when L3 filtering is used

Field	Value	Comment
onDurationTimer	psf1	As specified in clause 6.3.2 in TS 36.331
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	sf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table A.8.4.3.1-4: TimeAlignmentTimer -Configuration for E-UTRAN TDD-TDD inter-frequency event triggered reporting in DRX under AWGN propagation conditions with DRX when L3 filtering is used

Field	Value	Comment
TimeAlignmentTimer	sf500	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	2	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.4.3.2 **Test Requirements**

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 6400 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of

time period T2 to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

A.8.4.4 E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

A.8.4.4.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in clause 8.1.2.3.7.

The test scenario comprises of two E-UTRA TDD carriers and one cell on each carrier as given in tables A.8.4.4.1-1 and A.8.4.4.1-2. PDCCHs indicating new transmissions shall be sent continuously to ensure that the UE would have ACK/NACK sending during identifying a new CGI of E-UTRAN cell. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-frequency monitoring.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE. Measurement gaps shall be deconfigured before the start of T3.

Table A.8.4.4.1-1: General test parameters for E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
E-UTRA RF channel number		1, 2	Two TDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1.
Neighbour cell		Cell 2	Cell 1 is on RF channel number 2.
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211. The same configuration in both cells
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	s	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
si-RequestForHO		TRUE	As specified in clause 5.5.3.1 in TS 36.331.
Time offset between cells	μS	3	Synchronous cells
T1	s	5	-
T2	S	≤10	
T3	S	5	

Table A.8.4.4.1-2: Cell specific test parameters for E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Parameter	Unit	Cell 1				Cell 2		
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel		1			2			
Number								
BW _{channel}	MHz		10			10		
OCNG Patterns defined in		OP.1	OP.1	OP.1	OP.2	OP.2	OP.2	
A.3.2.2.1 (OP.1 TDD) and		TDD	TDD	TDD	TDD	TDD	TDD	
in A.3.2.2.2 (OP.2 TDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB		_			_		
PHICH_RA	dB		0			0		
PHICH_RB	dB							
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
\hat{E}_{s}/I_{ot}	dB	4	4	4	-Infinity	7	7	
$N_{oc}^{ m Note2}$	dBm/15 KHz	-98						
\hat{E}_s/N_{oc}	dB	4	4	4	-Infinity	7	7	
RSRP Note 3	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91	
SCH_RP Note3	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91	
Propagation Condition			•	AW	GN			
	sed such that both	cells are fully	allocated a	nd a consta	nt total trans	mitted powe	r spectral	
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral								

density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are Note 3: not settable parameters themselves

A.8.4.4.2 **Test Requirements**

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

 $Test\ requirement = RRC\ Procedure\ delay +\ T_{identify\ CGI,inter} + reporting\ delay$

= 15 + 150 + 2ms from the start of T3

= 167 ms, allow 170 ms.

The UE shall be scheduled continuously throughout the test, and from the start of T3 until 170 ms at least 42 ACK/NACK shall be detected as being transmitted by the UE.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The overall 42 ACK/NACK number is caused by two parts. Firstly, at least 30 ACK/NACK shall be sent during identifying the cell global identifier of cell 2 according to the requirement in Clause 8.1.2.3.7.1. Secondly, given that continuous DL data allocation, and the measurement gaps have been deconfigured before the start of T3, additional 12 ACK/NACK shall be sent from the start of T3 until 170 ms excludes 150 ms for identifying the cell global identifier of cell 2.

A.8.4.5 E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

A.8.4.5.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in clause 8.1.2.3.7. The requirement is verified in a DRX configuration.

The test scenario comprises of two E-UTRA TDD carriers and one cell on each carrier as given in tables A.8.4.5.1-1, A.8.4.5.1-2, A.8.4.5.1-3 and A.8.4.5.1-4. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-frequency monitoring.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE. Measurement gaps shall be deconfigured before the start of T3.

In the test UE needs to be provided at least once every 1280ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE sends scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

Table A.8.4.5.1-1: General test parameters for E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
E-UTRA RF channel number		1, 2	Two TDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1.
Neighbour cell		Cell 2	Cell 1 is on RF channel number 2.
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211. The same configuration in both cells
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	s	0	
Filter coefficient		0	L3 filtering is not used
DRX		ON	DRX related parameters are defined in Table A.8.4.5.1-3
si-RequestForHO		TRUE	As specified in clause 5.5.3.1 in TS 36.331.
Time offset between cells	μs	3	Synchronous cells
T1	s	5	
T2	S	≤30	UE shall report cell within 25.6s (20 DRX cycles)
T3	s	5	

Table A.8.4.5.1-2: Cell specific test parameters for E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	Т3	T1	T2	T3
E-UTRA RF Channel			1			2	
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns defined in		OP.1	OP.1	OP.1	OP.2	OP.2	OP.2
A.3.2.2.1 (OP.1 TDD) and		TDD	TDD	TDD	TDD	TDD	TDD
in A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB		_			_	
PHICH_RA	dB		0			0	
PHICH_RB	dB						
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
\hat{E}_{s}/I_{ot}	dB	4	4	4	-Infinity	7	7
$N_{oc}^{ m Note~2}$	dBm/15 KHz	-98					
\hat{E}_s/N_{oc}	dB	4	4	4	-Infinity	7	7
RSRP Note 3	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91
SCH_RP Note3	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91
Propagation Condition		AWGN					
	sed such that both	cells are fully	y allocated a	nd a consta	nt total trans	mitted powe	r spectral
density is achieved for all OFDM symbols.							

density is achieved for all OFDM symbols.

Interference from other cells and noise sources not specified in the test is assumed to be constant over Note 2: subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{\it oc}$ to be fulfilled.

RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are Note 3: not settable parameters themselves.

Table A.8.4.5.1-3: DRX configuration for E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Field	Value	Comment
onDurationTimer	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table A.8.4.5.1-4: TimeAlignmentTimer - Configuration for E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Field	Value	Comment
TimeAlignmentTimer	Infinity	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	2	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.4.5.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

Test requirement = RRC Procedure delay + $T_{identify CGI, inter}$ + reporting delay

- = 15 + 150 + 2ms from the start of T3
- = 167 ms, allow 170 ms.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.4.6 E-UTRAN TDD-TDD Inter-frequency event triggered reporting for TDD UL/DL configuration 0

A.8.4.6.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the TDD-TDD inter-frequency cell search requirements in clause 8.1.2.3.4.

The test parameters are given in Table A.8.4.6.1-1 and A.8.4.6.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.4.1.1-1: General test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting for TDD UL/DL configuration 0

Parameter	Unit	Value	Comment
		DL Reference Measurement	
PDSCH parameters		Channel R.5 TDD	As specified in clause A.3.1.1.2
		DL Reference Measurement	
PCFICH/PDCCH/PHICH		Channel R.6 TDD	As specified in clause A.3.1.2.2
parameters			
Gap Pattern Id		1	As specified in TS 36.133 clause 8.1.2.1.
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211.
			The same configuration in both cells
Uplink-downlink configuration		0	As specified in TS 36.211 clause 4.2 Table
_			4.2-2
CP length		Normal	
E-UTRA RF Channel Number		1, 2	Two TDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2	Cell 2 is on RF channel number 2
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Time offset between cells		3 μs	Synchronous cells
T1	S	5	
T2	S	10	

Table A.8.4.6.1-2: Cell specific test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting for TDD UL/DL configuration 0

Parameter	Unit	Ce	ell 1	Cell 2		
		T1	T2	T1	T2	
E-UTRA RF Channel		1		2		
Number						
BW _{channel}	MHz		10	10)	
Correlation Matrix and		1x2	Low	1x2 L	_OW	
Antenna Configuration						
OCNG Pattern defined						
n A.3.2.2 (TDD)		OP.	TDD	OP.2	TDD	
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB		0			
PHICH_RB	dB		0	0		
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
\hat{E}_{s}/I_{ot}	dB	4	4	-Infinity	7	
$N_{oc}^{ m Note~3}$	dBm/15 kHz	-98		-98		
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-infinity	-91	
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7	
Propagation Condition			E	TU70		

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.4.6.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than [7920] ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.4.7 E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation conditions in synchronous cells for Increased Carrier Monitoring without Reduced Performance Group

A.8.4.7.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the TDD-TDD inter-frequency cell search requirements in clause 8.1.2.3.4.

Note 2: The resources for uplink transmission are assigned to the UE priori to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

The test parameters are given in Table A.8.4.1.1-1 and A.8.4.1.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cells 2, 3 or 4.

Table A.8.4.7.1-1: General test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
UE configured E-UTRA RF		1, 2,3,4,5,6,7,8,9	Serving cell and eight TDD carrier
Channel Number			frequencies are used in the UE neighbour cell list.
Test equipment configuration		Cell 1 uses UTRA RF channel	
		number 1	
		Cells 2,3,4 are randomly	
		selected to use different	
		frequencies selected from	
		frequencies 2,3,4,5,6,7,8,9	
Gap Pattern Id		1	As specified in TS 36.133 clause 8.1.2.1.
CP length		Normal	
E-UTRA RF Channel Number		1, 2	Two TDD carrier frequencies are used.
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2	Cell 2 is on RF channel number 2
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
T1	S	5	
T2	S	80	

Table A.8.4.7.1-2: Cell specific test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells (Cell # 1 and Cell # 2)

					II 2
		T1	T2	T1	T2
E-UTRA RF Channel Number			1	Randomly s 2,3,4,5,6,7,8 su in the normal ne	ich that cell 2 is
BW _{channel}	MHz		N _{RB} = 25 N _{RB} = 50	in the normal performance grou 5MHz: N _{RB,} = 25 10MHz: N _{RB,} = 50	
Measurement			10-15	5MHz:	
bandwidth	n_{PRB}	10MHz	: 22-27	10MHz	: 22-27
PDSCH Reference		5MHz: F	R.5 TDD		=
measurement channel defined in A.3.1.1.		10MHz:	R.0 TDD		
PDSCH allocation	n_{PRB}		: 7-17 : 13-36		
PDCCH/PCFICH/PHIC H Reference measurement channel defined in A.3.1.2.			11 TDD R.6 TDD	5MHz: R 10MHz:	
OCNG Patterns defined in A.3.2.			P.15 TDD OP.1 TDD		P.16 TDD DP.2 TDD
PBCH_RA	dB	10111121 01 11 12 12			
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB	1			
PHICH_RA	dB	1			
PHICH_RB	dB	()	()
PDCCH_RA	dB]			
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$N_{oc}^{ m Note 3}$	dBm/15 kHz	-G	98	-9	98
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	-Infinity	7
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91
SCH_RP Note 4	dBm/15 kHz	-94	-94	-infinity	-91
Io ^{Note 4}	dBm/ BW _{channel}	- 64.76+10log(N _{RB,c} /50)	- 64.76+10log(N _{RB,0} /50)	- 70.22+10log(N _{RB,c} /50)	- 62.43+10log(N _{RB,} /50)
Propagation Condition			J70	ETI	
Correlation Matrix and			Low	1x2	Low
Antenna Configuration					
Timing offset to cell 1	ms		-	3	3

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission are assigned to the UE priori to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.4.7.1-2: Cell specific test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells (Cell # 3 and Cell # 4)

Parameter	Unit	Ce	II 3	Cell 4		
		T1	T2	T1	T2	
E-UTRA RF Channel		Randomly s	elected from	Randomly s	elected from	
Number		2,3,4,5,6,7,8 s	such that cell 3	2,3,4,5,6,7,8 st	ich that cell 4 is	
		is in the norma	al performance	in the normal pe	rformance group	
		group				
BW _{channel}	MHz		√ _{RB} = 25	5MHz: N _{RB,} = 25		
			$N_{RB} = 50$		$N_{RB,=} 50$	
Correlation Matrix and		1x2	Low	1x2	Low	
Antenna Configuration						
Measurement			10-15		10-15	
bandwidth	$n_{\it PRB}$	10MHz	: 22-27	10MHz	: 22-27	
PD0011D (
PDSCH Reference			-	,	-	
measurement channel						
defined in A.3.1.1.						
PDSCH allocation	$n_{{\scriptscriptstyle PRB}}$,	-	,	=	
PDCCH/PCFICH/PHIC		5MHz: R	.11 TDD	5MHz: R	.11 TDD	
H Reference		10MHz:	R.6 TDD	10MHz:	R.6 TDD	
measurement channel						
defined in A.3.1.2.						
OCNG Patterns		5MHz: OI	P.16 TDD	5MHz: Ol	P.16 TDD	
defined in A.3.2.		10MHz: 0	P.2 TDD	10MHz: OP.2 TDD		
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	()	()	
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{oc}^{ m Note~3}$	dBm/15 kHz	-6	98	-6	98	
\hat{E}_s/N_{oc}	dB	-Infinity	7	-Infinity	7	
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	dB	-Infinity	7	-Infinity	7	
RSRP Note 4	dBm/15 kHz	-Infinity	-91	-Infinity	-91	
SCH_RP Note 4	dBm/15 kHz	-infinity	-91	-infinity	-91	
lo ^{Note 4}	dBm/ BW _{channel}	-	-		-	
-	Channel Channel	70.22+10log(62.43+10log(70.22+10log(N	62.43+10log(N	
		N _{RB,c} /50) N _{RB,c} /50)		70.22+1010g(N RB, /50)	RB,c/50)	
Propagation Condition			J70		 J70	
Correlation Matrix and			Low		Low	
Antenna Configuration		1,72		IAL		
Timing offset to cell 1	ms		3		3	
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power						

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 2: The resources for uplink transmission are assigned to the UE priori to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be

A.8.4.7.2 Test Requirements

The UE shall send Event A3 triggered measurement reports for cells 2, 3 and 4, with a measurement reporting delay less than 61.44s from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.4.8 TDD-TDD Interfrequency correct reporting of measurement events with reduced performance group configured, non DRX

A.8.4.8.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the TDD-TDD inter-frequency cell measurement requirements for increased UE carrier monitoring in clause 8.1.2.3.

The test parameters are given in Tables A.8.4.8.1-1, A.8.4.8.1-2 and A.8.4.8.1-3. In this test, there are 4 cells on different carrier frequencies and gap pattern configuration #0 as defined in table A.8.4.8.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Events A3 is used. The test consists of two successive time periods for every reptitation, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of neighoubour cells. At the start of each repetition of T1, the test equipment provides signals for cell 1 (serving cell), and cells 2, 3 and 4 which are selected from the 8 cells which are configured in the UE neighbour cell list. Cells 2, 3 and 4 are chosen randomly, such that one frequency belongs to the normal performance group and two frequencies belong to the reduced performance group.

Table A.8.4.8.1-1: General test parameters for TDD-TDD Interfrequency correct reporting of measurement events with reduced performance group configured, non DRX

Parameter	Unit	Value	Comment
UE configured E-UTRA RF		1,2,3,4,5,6,7,8,9	Serving cell and 8 TDD carrier frequencies
Channel Number			are used in the UE neighbour cell list.
			Frequencies 5,6,7,8 and 9 are indicated to
			have reduced performance
Test equipment		Cell 1 uses E-UTRA RF cannel	
configuration		number 1	
		Cell 2,3,4 are randomly selected	
		to use different frequencies	
		selected from frequencies	
		2,3,4,5,6,7,8,9	
Active cell		Cell 1	Cell 1 is on RF channel number 1
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Scaling factor configurations		8	As specified in TS 36.133 clause
			8.1.2.1.1a
T1	S	5	
T2	S	155	

Table A.8.4.8.1-2: Cell specific test parameters for TDD-TDD Interfrequency correct reporting of measurement events with reduced performance group configured, non DRX (Cell #1 and Cell #2)

Parameter	Unit	Ce	II 1	Cell 2, Cell 3, Cell 4			
		T1	T2	T1	T2		
E-UTRA RF Channel		,		Randomly se	lected from 2,3,4		
Number			2 is in the normal				
			ance group				
BW _{channel}		5MHz: N	N _{RB} = 25	5MHz: N _{RB.} = 25			
S.I.d.III.G.			$N_{RB} = 50$		z: N _{RB,} = 50		
Special subframe				6	, , ,		
configuration Note1							
Uplink-downlink				1			
configuration Note1							
PDSCH parameters:		5MHz: I	R.4 TDD	5MHz: R.4 TDD			
DL Reference			R.0 TDD	10MHz:R.0 TDD			
Measurement Channel							
As specified in							
clause A.3.1.1.2							
PCFICH/PDCCH/PHIC		5MHz: R	1.11 TDD	5MHz:	R.11 TDD		
H parameters: DL			R.6 TDD		z:R.6 TDD		
Reference			•				
Measurement Channel							
As specified in							
clause A.3.1.2.2							
OCNG Patterns		5MHz: O	P.9 TDD	5MHz: OP.10.TDD			
defined in A.3.2.2.1,			P.1 TDD	10MHz:OP.2 TDD			
A.3.2.2.2 ,A.3.2.2.9							
and A.3.2.2.10							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB	- (0			
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB							
OCNG_RA ^{Note 2}	dB						
OCNG_RB ^{Note 2}	dB						
	dB dBm/15 kHz				00		
$N_{oc}^{ m Note~4}$	UDIII/ 15 KHZ		-98		-98		
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7		
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}^{\mathrm{Note 5}}$	dB	4	4	-Infinity	7		
RSRP Note 5	dBm/15 kHz	-94	-94	-Infinity	-91		
SCH RP Note 5	dBm/15 kHz	-94	-94	-Infinity	-91		
lo Note 4	dBm/Ch BW	-64.76	-64.76	-70.22	-62.43		
.•	35, 311 511	+10log	+10log	+10log	+10log		
		(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)		
Propagation Condition		AW			WGN		
Antenna Configuration		1x2 1x2					
Timing offset to Cell 1		 	<u>.</u>		3 μs		
Note 1: For special su	hframa and unlink	downlink oonfigu	rations are Tabl				

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 3: The resources for uplink transmission are assigned to the UE priori to the start of time period T2.

Note 4: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled

Note 5: Es/lot, RSRP, SCH_RP and lo have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Table A.8.4.8.1-3: Cell specific test parameters for TDD-TDD Interfrequency correct reporting of measurement events with reduced performance group configured, non DRX (Cell #3, Cell #4)

Parameter	Unit	Ce	II 3	Cell 4			
		T1	T2	T1 T2			
E-UTRA RF Channel		Randomly s	elected from	Randomly	andomly selected from		
Number		5,6,7,8,9 such		5,6,7,8,9 such that cell 4 is in			
		the reduced		the reduced performance group.			
		gro		Cell 4 RF channel is different			
		3.3		from Cell 3 RF channel.			
BW _{channel}		5MHz: N	Jpp = 25	5MHz: N _{RB} ,= 25			
D Chame			$N_{RB} = 50$		z: N _{RB.} = 50		
Special subframe			-1(D - 0	6	, сс		
configuration Note1							
Uplink-downlink				1			
configuration Note1				·			
PDSCH parameters:		5MHz: I	R.4 TDD	5MHz:	R.4 TDD		
DL Reference			R.0 TDD		z:R.0 TDD		
Measurement Channel				10141112.111.0 122			
As specified in							
clause A.3.1.1.2							
PCFICH/PDCCH/PHIC		5MHz: R	.11 TDD	5MHz:	R.11 TDD		
H parameters: DL			R.6 TDD	_	z:R.6 TDD		
Reference							
Measurement Channel							
As specified in							
clause A.3.1.2.2							
OCNG Patterns		5MHz: OI	P.10.TDD	5MHz: OP.10.TDD			
defined in A.3.2.2.2			P.2 TDD	10MHz:OP.2 TDD			
and A.3.2.2.10							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB	† ()	0			
PDCCH_RA	dB						
PDCCH_RB	dB	1					
PDSCH_RA	dB						
PDSCH_RB	dB	1					
OCNG_RA ^{Note 2}	dB	1					
OCNG_RB ^{Note 2}	dB						
	dBm/15 kHz	_c	-98		-98		
$N_{oc}^{ m Note~4}$	GBITI/ TO RETE			-90			
\hat{E}_s/N_{oc}	dB	-Infinity	7	-Infinity	7		
$\hat{E}_{_{s}}/I_{_{ot}}$ Note 5	dB	-Infinity	7	-Infinity	7		
RSRP Note 5	dBm/15 kHz	-Infinity	-91	-Infinity	-91		
SCH RP Note 5	dBm/15 kHz	-Infinity	-91	-Infinity	-91		
lo Note 5	dBm/Ch BW	-70.22			-62.43		
		+10log	+10log	+10log	+10log		
		(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)		
Propagation Condition		AWGN AWGN					
Antenna Configuration			(2		1x2		
Timing offset to Cell 1		3			3 μs		
Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211							

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 3: The resources for uplink transmission are assigned to the UE priori to the start of time period T2.

Note 4: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 5: Es/lot, RSRP, SCH_RP and lo have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

A.8.4.8.2 Test Requirements

The UE shall send Event A3 triggered measurement reports for cells 2, 3 and 4, with a measurement reporting delay less than 13.17s (cell 2) and 153.6s (cell 3 and 4) from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report.

A.8.4.9 TDD-TDD Inter-frequency correct reporting of measurement events with reduced performance group configured, DRX

A.8.4.9.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event in DRX. This test will partly verify the TDD-TDD inter-frequency cell search requirements when DRX is used in clause 8.1.2.3.

The test parameters are given in Tables A.8.4.9.1-1, A.8.4.9.1-2, A.8.4.9.1-3 and A.8.4.9.1-4. In this test, there are four cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

The UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle..

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2, 3 or 4. At the start of each repetition of T1, the test equipment provides signals for cell 1 (serving cell), and cells 2, 3 and 4 which are selected from the 8 cells on different frequencies which are configured in the UE neighbour cell list. Cells 2, 3 and 4 are chosen randomly, such that one frequency belongs to the normal performance group and two frequencies belong to the reduced performance group.

Table A.8.4.9.1-1: General test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting for IncMon

Parameter	Unit	Value	Comment
UE configured E-UTRA RF		1, 2,3,4,5,6,7,8,9	Serving cell and eight TDD carrier frequencies are used in
Channel Number			the UE neighbour cell list. Frequencies 5,6,7,8 and 9 are
			indicated to have reduced performance
Test equipment		Cell 1,2,3,4	Cell 1 uses E-UTRA RF channel number 1
configuration			Cells 2 are randomly selected to use different frequencies selected from E-UTRA frequencies 2, 3, 4.
			Cells 3, 4 are randomly selected to use different
			frequencies selected from E-UTRA frequencies 5, 6, 7, 8,
			9.
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cells		Cell 2,3,4	
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Special subframe		6	As specified in table 4.2-1 in TS 36.211. The same
configuration			configuration in both cells
Uplink-downlink		1	As specified in TS 36.211 clause 4.2 Table 4.2-2
configuration			
A3-Offset	dB	-5	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		ON	DRX related parameters are defined in Table A.8.3.9.1-3
Scaling factor for reduced		8	
performance group			
T1	S	5	
T2	S	155	

Table A.8.4.9.1-2: Cell specific test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting for IncMon

Parameter	Unit	Cel		Cell 2		Ce	II 3	Cell 4		
		T1	T2	T1	T2	T1	T2	T1	T2	
E-UTRA RF Channel Number		1	1		ected from 2,3,4	Randomly sele	ected from 5, 6,	Randomly sele	ected from 5, 6,	
				such that cell 2 is in the		7, 8, 9 such t	hat cell 3 is in	7, 8, 9 such that cell 4 is in the		
				normal performance group		the reduced performance		reduced performance group		
							oup			
Channel Bandwidth	MHz	5MHz: N		5MHz: NRB,= 25		5MHz: NRB = 25		5MHz: NRB,= 25		
(BW _{channel})		10MHz: N		10MHz: NRB,= 50		10MHz: NRB = 50		10MHz: NRB,= 50		
PDSCH parameters as		5MHz: F		5MHz: R.4 TDD		5MHz: R.4 TDD		5MHz: R.4 TDD		
specified in clause A.3.1.1.2		10MHz: I		10MHz: R.0 TDD 5MHz: R.11 TDD		10MHz: R.0 TDD 5MHz: R.11 TDD		10MHz: R.0 TDD 5MHz: R.11 TDD		
PCFICH/PDCCH/PHICH		5MHz: R								
parameters as specified in clause A.3.1.2.2		10MHz: I	עטו א.א	TUIVIHZ	R.6 TDD	TOWINZ	R.6 TDD	TUIVIHZ	R.6 TDD	
OCNG Patterns defined in		5MHz: O	D 0 TDD	5MH: O	D 10 TDD	5MH-7: O	D 10 TDD	5MH: O	D 10 TDD	
A.3.2.2		10MHz: C		5MHz: OP.10 TDD 10MHz: OP.2 TDD		5MHz: OP.10 TDD 10MHz: OP.2 TDD		5MHz: OP.10 TDD 10MHz: OP.2 TDD		
PBCH_RA	dB	10101112. C	71.11100	10101112.	51.2 100	10101112.	JI .Z 100	TOWN 12. C	JI .Z 100	
PBCH_RB	dB									
PSS_RA	dB									
SSS_RA	dB									
PCFICH_RB	dB									
PHICH_RA	dB			0		0		0		
PHICH RB	dB	C	1							
PDCCH_RA	dB		,	· ·	Ŭ		Ŭ		Ŭ	
PDCCH_RB	dB									
PDSCH RA	dB									
PDSCH_RB	dB									
OCNG_RA ^{Note 1}	dB									
OCNG_RB ^{Note 1}	dB									
$N_{oc}^{$	dBm/15 kHz	-98		-98		-98		-98		
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4	-Infinity	4	-Infinity	4	
$\hat{E}_{_{s}}/I_{_{ot}}^{}$ Note 4	dB	4	4	-Infinity	4	-Infinity	4	-Infinity	4	
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-94	-Infinity	-94	-Infinity	-94	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-94	-Infinity	-94	-Infinity	-94	
lo Note 4	dBm/Ch BW	-64.76+10log	-64.76+10log	-70.22+10log	-64.76+10log	-70.22+10log	-64.76+10log	-70.22+10log	-64.76+10log	
		(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	$(N_{RB,c}/50)$	
Propagation Condition		AWGN		AWGN		AWGN		AWGN		
Antenna Configuration		1x2		1x2		1x2		1x2		
Time offset to cell1	μS	-		3		3		3		

- Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.
- Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.
- Note 4: E_s/I_{ot}, RSRP, SCH_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.4.9.1-3: drx-Configuration to be used in E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used for IncMon

Field	Value	Comment
onDurationTimer	psf1	
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf160	
shortDRX	disable	
Note: For further information see clause 6.3.2 in TS 36.331.		

Table A.8.4.9.1-4: *TimeAlignmentTimer* and *sr-ConfigIndex* Configuration to be used in E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used for IncMon

Field	Value	Comment
TimeAlignmentTimer	sf500	For further information see clause 6.3.2 in TS 36.331.
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213

A.8.4.9.2 Test Requirements

The UE shall send Event A3 triggered measurement reports for cells 2, 3 and 4, with a measurement reporting delay less than 13.2s (cell 2) and 153.6s (cell 3 and 4) from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report.

Where:

When DRX cycle is 160ms, the delay requirement of cell identification and measurement period are specified in section 8.1.2.3.1.2 and Non DRX Requirements in clause 8.1.2.3.1.1 are applicable.

The requirement of inter frequency cell identification delay are specified as

$$\mathbf{T}_{\text{Identify_Inter}} = \mathbf{T}_{\text{Basic_Identify_Inter}} \cdot \frac{480}{\mathbf{T}_{\text{Inter1}}} \cdot N_{\text{freq},n} \cdot K_n \quad \textit{ms} \text{ (normal performance) and }$$

$$T_{\text{Identify_Inter}} = T_{\text{Basic_Identify_Inter}} \cdot \frac{480}{T_{\text{Inter}1}} \cdot N_{\textit{freq},r} \cdot K_r \quad \textit{ms} \, (\text{reduced performance})$$

 $T_{Basic_Identify_inter}$ 480ms, See section 8.1.2.3.1.1

 T_{Inter1} 60ms, See section 8.1.2.1

 $N_{freq,n}$ and $N_{freq,r}$ 3 and 5 set in this test case.

 K_n and K_r 8/7 and 8, See section 8.1.2.1.1a.

This gives 13165.7ms for cells 2 on normal carrier, and 153600ms for cell 3 and cell 4 on reduced carriers for Event A3 triggered measurement reporting delay. The test requirements allow 13.2s and 153.6s.

A.8.5 E-UTRAN FDD - UTRAN FDD Measurements

A.8.5.1 E-UTRAN FDD - UTRAN FDD event triggered reporting under fading propagation conditions

A.8.5.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the E-UTRAN FDD- UTRAN FDD cell search requirements in clause 8.1.2.4.1.

The test parameters are given in Tables A.8.5.1.1-1, A.8.5.1.1-2 and A.8.5.1.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.5.1.1-1: General test parameters for E-UTRAN FDD-UTRAN FDD event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1.
Gap Pattern Id		1	As specified in TS 36.133 clause 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD) measurement quantity		CPICH Ec/lo	
b1-Threshold-UTRA	dB	-18	CPICH Ec/lo threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA FDD cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell list.
T1	S	5	
T2	S	6	

Table A.8.5.1.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for event triggered reporting of UTRAN FDD cell under fading propagation conditions

Parameter	Unit	Cell	1		
		T1	T2		
E-UTRA RF Channel Number		1			
BW _{channel}	MHz	10			
Correlation Matrix and		1x2 Lo	ow		
Antenna Configuration					
OCNG Pattern defined in					
A.3.2.1.1 (OP.1 FDD)		OP.1 F	DD		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB	_			
PHICH_RB	dB	0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4		
\hat{E}_s/N_{oc}	dB	4	4		
N_{oc}	dBm/15 kHz	-98			
RSRP	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94	-94		
Propagation Condition		ETU7	70		

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Table A.8.5.1.1-3: Cell specific test parameters for UTRAN FDD (cell # 2) for event triggered reporting of UTRAN FDD cell under fading propagation conditions

Parameter	Unit	Cell 2	2	
		T1	T2	
UTRA RF Channel Number		1		
CPICH_Ec/lor	dB	-10		
PCCPCH_Ec/lor	dB	-12		
SCH_Ec/lor	dB	-12		
PICH_Ec/lor	dB	-15		
DPCH_Ec/lor	dB	N/A		
OCNS		-0.94	1	
\hat{I}_{or}/I_{oc}	dB	-Infinity	-1.8	
I_{oc}	dBm/3.84 MHz	-70		
CPICH_Ec/lo	dB	-Infinity	-14	
Propagation Condition		Case 5 (Note 3)		

Note 1: The DPCH level is controlled by the power control loop.

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal

to lor.

Note 3: Case 5 propagation conditions are defined in Annex A of TS 25.101.

A.8.5.1.2 Test Requirements

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 4800 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.5.2 E-UTRAN FDD - UTRAN FDD SON ANR cell search reporting under AWGN propagation conditions

A.8.5.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of the strongest UTRAN cell for SON automatic neighbour relations. This test will partly verify the E-UTRAN FDD - UTRAN FDD cell search requirements for identification of a new UTRA FDD cell for SON given in clause 8.1.2.4.7.1.

The test parameters are given in Tables A.8.5.2.1-1, A.8.5.2.1-2 and A.8.5.2.1-3 below. In the measurement control information it is indicated to the UE that periodical reporting with the purpose 'reportStrongestCellsForSON' is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. Prior to the start of time period T1, an interRAT periodic measurement reporting configuration with purpose reportStrongestCellsForSON is configured, and linked to a UTRA measurement object corresponding to channel UARFCN 1. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.5.2.1-1: General test parameters for E-UTRAN FDD-UTRAN FDD cell search reporting for SON ANR in AWGN propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1.
Gap Pattern Id		1	As specified in TS 36.133 clause 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD) measurement quantity		CPICH Ec/lo	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA FDD cell list size		None	No explicit neighbour list is provided to the UE
T1	S	>5	During T1, cell 2 shall be powered off, and during the off time the primary scrambling code shall be changed, The intention is to ensure that cell 2 has not been detected by the UE prior to the start of period T2.
T2	S	6	

Table A.8.5.2.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for UTRAN FDD cell search for SON ANR under AWGN propagation conditions

Parameter	Unit	Ce	II 1
		T1	T2
E-UTRA RF Channel Number			1
BW _{channel}	MHz	1	0
OCNG Pattern defined in			
A.3.2.1.1 (OP.1 FDD)		OP.1	FDD
PBCH_RA	dB		
PBCH_RB	dB]	
PSS_RA	dB		
SSS_RA	dB]	
PCFICH_RB	dB		
PHICH_RA	dB		_
PHICH_RB	dB		0
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA ^{Note 1}	dB		
OCNG_RB ^{Note 1}	dB		
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4
$N_{oc}^{ m Note 3}$	dBm/15 kHz	-98	
\hat{E}_s/N_{oc}	dB	4	4
RSRP Note 4	dBm/15 kHz	-94	-94
SCH_RP	dBm/15 kHz	-94	-94
Propagation Condition		AWGN	
Note 1: OCNG shall be used	such that both c	ells are fully allocated and a cou	nstant total transmitted now

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be

Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.5.2.1-3: Cell specific test parameters for UTRAN FDD (cell # 2) for UTRAN FDD cell search for SON ANR under AWGN propagation conditions

Parameter	Unit	Cell	2		
		T1	T2		
UTRA RF Channel Number		1			
CPICH_Ec/lor	dB	-10			
PCCPCH_Ec/lor	dB	-12			
SCH_Ec/lor	dB	-12			
PICH_Ec/lor	dB	-15			
DPCH_Ec/lor	dB	N/A			
OCNS		-0.941			
\hat{I}_{or}/I_{oc}	dB	-Infinity	-3.35		
I_{oc}	dBm/3.84 MHz	-70			
CPICH_Ec/lo	dB	-Infinity	-15		
Propagation Condition		AWGN			

Note 1: The DPCH level is controlled by the power control loop.

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{\rm or}$.

A.8.5.2.2 Test Requirements

The UE shall send the first measurement report containing the primary scrambling code of cell 2, with a measurement reporting delay less than 4800 ms from the beginning of time period T2.

The rate of correct measurement reports observed with this delay during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.5.3 E-UTRAN FDD-UTRAN FDD event triggered reporting when DRX is used under fading propagation conditions

A.8.5.3.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These tests will partly verify the E-UTRAN FDD-UTRAN FDD cell search requirements when DRX is used in clause 8.1.2.4.1.2.

In these tests, there are two cells, one E-UTRAN cell and one UTRAN cell, and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

The common test parameters are given in Table A.8.5.3.1-1. Cell specific test parameters are given in Table A.8.5.3.1-2 for E-UTRAN and in Table A.8.5.3.1-5 for UTRAN. DRX configuration for Test1 and Test2 are given in Table A.8.5.2.1-3 and time alignment timer and scheduling request related parameters in Table A.8.5.2.1-4.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B1 is used. The tests consist of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.5.3.1-1: General test parameters for E-UTRAN FDD-UTRAN FDD event triggered reporting when DRX is used in fading propagation conditions

Parameter	Unit	Test 1	Test 2	Comment
		Value		
PDSCH parameters (E-		DL Reference Measurement		As specified in clause A.3.1.1.1 Note that
UTRAN FDD)		Channel R.0 FDD)	UE may only be allocated at On Duration
PCFICH/PDCCH/PHICH		DL Reference Me	easurement	As specified in clause A.3.1.2.1.
parameters (E-UTRAN FDD)		Channel R.6 FDD)	
Gap Pattern Id		0		As specified in TS 36.133 clause 8.1.2.1.
Active cell		Cell 1		Cell 1 is on E-UTRA RF channel number
				1.
Neighbour cell		Cell 2		Cell 2 is on UTRA RF channel number 1.
CP length		Normal		Applicable to cell 1
E-UTRA RF Channel		·	[One E-UTRA FDD carrier frequency is
Number				used.
E-UTRA Channel Bandwidth	MHz	1	0	
(BW _{channel})				
UTRA RF Channel Number		1		One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD)		CPICH	ł Ec/lo	
measurement quantity				
b1-Threshold-UTRA	dB	-18		CPICH Ec/lo threshold for event B1.
Hysteresis	dB	0		
TimeToTrigger	S	0		
Filter coefficient		0		L3 filtering is not used
PRACH configuration		4		As specified in table 5.7.1-2 in TS 36.211
Access Barring Information	-	Not Sent		No additional delays in random access
				procedure.
DRX		ON		DRX related parameters are defined in
				Table A.8.5.3.1-3
Monitored UTRA FDD cell		12		UTRA cells on UTRA RF channel 1
list size				provided in the cell list.
T1	S	5		
T2	S	6	30	

Table A.8.5.3.1-2: Cell specific test parameters for E-UTRAN FDD (cell #1) event triggered reporting of UTRAN FDD cell when DRX is used under fading propagation conditions

Parameter	Unit	Cell 1
		T1 T2
E-UTRA RF Channel Number		1
BW _{channel}	MHz	10
Correlation Matrix and		1x2 Low
Antenna Configuration		
OCNG Pattern defined in		
A.3.2.1.1 (OP.1 FDD)		OP.1 FDD
PBCH_RA	dB	
PBCH_RB	dB	
PSS_RA	dB	
SSS_RA	dB	
PCFICH_RB	dB	
PHICH_RA	dB	_
PHICH_RB	dB	0
PDCCH_RA	dB	
PDCCH_RB	dB	
PDSCH_RA	dB	
PDSCH_RB	dB	
OCNG_RA ^{Note 1}	dB	
OCNG_RB ^{Note 1}	dB	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4 4
$N_{oc}^{ m Note~2}$	dBm/15 kHz	-98
RSRP Note 3	dBm/15 kHz	-94 -94
SCH_RP	dBm/15 kHz	-94 -94
\hat{E}_s/N_{oc}	dB	4 4
Propagation Condition		ETU70
Note 1: OCNG shall be used	such that both ce	ells are fully allocated and a constant total transmitted nower

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.5.3.1-3: drx-Configuration to be used in E-UTRAN FDD-UTRAN FDD event triggered reporting when DRX is used in fading propagation conditions

Field	Test1	Test2	Comment	
rieid	Value	Value		
onDurationTimer	psf1	psf1		
drx-InactivityTimer	psf1	psf1		
drx-RetransmissionTimer	psf1	psf1		
longDRX-CycleStartOffset	sf40	sf1280		
shortDRX	Disable	Disable		
Note: For further information see clause 6.3.2 in TS 36.331.				

Table A.8.5.3.1-4: *TimeAlignmentTimer* and *sr-ConfigIndex* -Configuration to be used in E-UTRAN FDD-UTRAN FDD event triggered reporting when DRX is used in fading propagation conditions

Field	Test1 Value	Test2 Value	Comment
TimeAlignmentTimer	sf500	sf500	For further information see clause 6.3.2 in TS 36.331.
sr-ConfigIndex	0	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

Table A.8.5.3.1-5: Cell specific test parameters for UTRAN FDD (cell # 2) for event triggered reporting of UTRAN FDD cell when DRX is used under fading propagation conditions

Parameter	Unit	Cell 2			
		T1	T2		
UTRA RF Channel Number		1			
CPICH_Ec/lor	dB	-10			
PCCPCH_Ec/lor	dB	-12			
SCH_Ec/lor	dB	-12			
PICH_Ec/lor	dB	-15			
DPCH_Ec/lor	dB	N/A			
OCNS		-0.94	1		
\hat{I}_{or}/I_{oc}	dB	-Infinity -1.8			
I_{oc}	dBm/3.84 MHz	-70			
CPICH_Ec/lo	dB	-Infinity -14			
Propagation Condition		Case 5 (Note 3)			

Note 1: The DPCH level is controlled by the power control loop.

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal

to l_{or}.

Note 3: Case 5 propagation conditions are defined in Annex A of TS 25.101.

A.8.5.3.2 Test Requirements

In Test1 the UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 2400 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE sends the measurement report on PUSCH.

In Test2 the UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 20*1280ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event B1 measurement report.

A.8.5.4 E-UTRAN FDD - UTRAN FDD enhanced cell identification under AWGN propagation conditions

A.8.5.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct enhanced reporting of UTRAN cells. This test will partly verify the Enhanced UTRA FDD cell identification requirements in clause 8.1.2.4.1.1.1a.

The test parameters are given in Tables A.8.5.4.1-1, A.8.5.4.1-2 and A.8.5.4.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time period T1, gaps are activated and an interRAT measurement reporting configuration is configured, and linked to a UTRA measurement object corresponding to channel UARFCN 1. Prior to time duration T2, the UE shall not have any timing information of cell 2. Cell 2 is powered up at the beginning of the T2

Table A.8.5.4.1-1: General test parameters for E-UTRAN FDD - UTRAN FDD enhanced cell identification under AWGN propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1.
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD)		CPICH Ec/Io	
measurement quantity			
b1-Threshold-UTRA	dB	-18	CPICH Ec/lo threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA FDD cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell list
T1	S	5	
T2	S	2	

Table A.8.5.4.1-2: Cell specific test parameters for cell #1 E-UTRAN FDD - UTRAN FDD enhanced cell identification under AWGN propagation conditions

Parameter	Unit	Cell 1				
		T1	T2			
E-UTRA RF Channel Number		1				
BW _{channel}	MHz	10				
OCNG Pattern defined in						
A.3.2.1.1 (OP.1 FDD)		OP.1 F	FDD			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4			
$N_{oc}^{ m Note 3}$	dBm/15 kHz	-98	3			
\hat{E}_s/N_{oc}	dB	4	4			
RSRP Note 4	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		AWG	SN .			

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{cc} to be

Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.5.4.1-3: Cell specific test parameters for cell #2 E-UTRAN FDD - UTRAN FDD enhanced cell identification under AWGN propagation conditions

Parameter	Unit	Cell 2		
		T1	T2	
UTRA RF Channel Number		1		
CPICH_Ec/lor	dB	-10		
PCCPCH_Ec/lor	dB	-12		
SCH_Ec/lor	dB	-12		
PICH_Ec/lor	dB	-15		
DPCH_Ec/lor	dB	N/A		
OCNS		-0.941		
\hat{I}_{or}/I_{oc}	dB	-∞ 0.02		
I_{oc}	dBm/3.84 MHz	-70		
CPICH_Ec/Io ^{Note 3}	dB	-∞ -13		
Propagation Condition		AWGN		

Note 1: The DPCH level is controlled by the power control loop.

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or} .

Note 3: This gives an SCH Ec/lo of -15dB

A.8.5.4.2 Test Requirements

The UE shall send the first measurement report containing the primary scrambling code of cell 2, with a measurement reporting delay less than 960 ms from the beginning of time period T2. The rate of correct measurement reports observed with this delay during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH

A.8.5.5 E- UTRAN FDD - UTRAN FDD identification of a new CGI of UTRAN cell using autonomous gaps

A.8.5.5.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of UTRA cell with autonomous gaps in clause 8.1.2.4.17.

The test parameters are given in Tables A.8.5.5.1-1, A.8.5.5.1-2 and A.8.5.5.1-3 below. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-frequency monitoring.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event B1. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE.

Table A.8.5.5.1-1: General test parameters for E-UTRAN FDD - UTRAN FDD identification of a new CGI of UTRAN cell using autonomous gaps

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1.
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD)		CPICH Ec/lo	
measurement quantity			
b1-Threshold-UTRA	dB	-18	CPICH Ec/lo threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
SIB3_REP	Frames	32	Applicable for cell 2 SIB3 scheduling
SIB3 SEG_COUNT		1	Applicable for cell 2 SIB3 scheduling
si-RequestForHO		TRUE	As specified in clause 5.5.3.1 in TS 36.331.
Monitored UTRA FDD cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell list.
CSG id (of cell 2)		Set to any non-empty value	
T1	S	5	
T2	S	≤10	
T3	S	5	

Table A.8.5.5.1-2: Cell specific test parameters for cell #1 E-UTRAN FDD - UTRAN FDD identification of a new CGI of UTRAN cell using autonomous gaps

Parameter	Unit	Cell 1			
		T1	T2		
E-UTRA RF Channel Number		1			
BW _{channel}	MHz	10			
OCNG Pattern defined in					
A.3.2.1.1 (OP.1 FDD)		OP.1 FD	D		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB	_			
PHICH_RB	dB	0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4		
$N_{oc}^{ m Note~3}$	dBm/15 kHz	-98			
\hat{E}_s/N_{oc}	dB	4 4			
RSRP Note 4	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94	-94		
Propagation Condition		AWGN			

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be

Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.5.5.1-3: Cell specific test parameters for cell #2 E-UTRAN FDD - UTRAN FDD identification of a new CGI of UTRAN cell using autonomous gaps

Parameter	Unit	Cell 2		
		T1	T2	
UTRA RF Channel Number		1		
CPICH_Ec/lor	dB	-10		
PCCPCH_Ec/lor	dB	-12		
SCH_Ec/lor	dB	-12		
PICH_Ec/lor	dB	-15		
DPCH_Ec/lor	dB	N/A		
OCNS		-0.941		
\hat{I}_{or}/I_{oc}	dB	-∞ 0.02		
I_{oc}	dBm/3.84 MHz	-70		
CPICH_Ec/Io ^{Note 3}	dB	-∞ -13		
Propagation Condition		AWGN		

Note 1: The DPCH level is controlled by the power control loop.

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or} .

Note 3: This gives an SCH Ec/lo of -15dB

A.8.5.5.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within [1965] milliseconds from the start of T3.

Test requirement = RRC Procedure delay + Tidentify_CGI, UTRAN FDD + reporting delay

- = 50 + [630] + 40*32 + 2ms from the start of T3
- = [1962] ms, allow [1965] ms.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.5.6 E-UTRAN FDD - UTRAN FDD event triggered reporting without measurement gaps under AWGN propagation conditions

A.8.5.6.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event without measurement gaps. This test will partly verify the E-UTRAN FDD- UTRAN FDD cell search requirements in clause 8.1.2.4.1.

The test parameters are given in Tables A.8.5.6.1-1, A.8.5.6.1-2 and A.8.5.6.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. PDCCH on the PCell shall be sent continuously to ensure that the UE sends ACK/NACKs throughout the test.

Table A.8.5.6.1-1: General test parameters for E-UTRAN FDD-UTRAN FDD event triggered reporting without measurement gaps under AWGN propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement	As specified in clause A.3.1.1.1.
		Channel R.3 FDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.1.
(E-UTRAN FDD)		Channel R.6 FDD	
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD) measurement		CPICH Ec/lo	
quantity			
b1-Threshold-UTRA	dB	-18	CPICH Ec/lo threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA FDD cell list size		12	UTRA cells on UTRA RF channel 1 provided
			in the cell list.
T1	S	5	
T2	S	6	

Table A.8.5.6.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for event triggered reporting of UTRAN FDD cell without measurement gaps under AWGN propagation conditions

Parameter	Unit	Cell 1			
		T1	T2		
E-UTRA RF Channel Number		1			
BW _{channel}	MHz	1()		
OCNG Pattern defined in					
A.3.2.1.10 (OP.10 FDD)		OP.10	FDD		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4		
\hat{E}_s/N_{oc}	dB	4	4		
N_{oc}	dBm/15 kHz	-98	8		
RSRP	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94	-94		
Propagation Condition		AWO	ĠN		

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Table A.8.5.6.1-3: Cell specific test parameters for UTRAN FDD (cell # 2) for event triggered reporting of UTRAN FDD cell without measurement gaps under AWGN propagation conditions

Parameter	Unit	Cell 2		
		T1	T2	
UTRA RF Channel Number		1		
CPICH_Ec/lor	dB	-10		
PCCPCH_Ec/lor	dB	-12		
SCH_Ec/lor	dB	-12		
PICH_Ec/lor	dB	-15		
DPCH_Ec/lor	dB	N/A		
OCNS		-0.941		
\hat{I}_{or}/I_{oc}	dB	-Infinity -1.8		
I_{oc}	dBm/3.84 MHz	-70		
CPICH_Ec/lo	dB	-Infinity -14		
Propagation Condition		AWGN		

Note 1: The DPCH level is controlled by the power control loop.

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}

A.8.5.6.2 Test Requirements

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 4800 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The UE shall send continuous ACK/NACK throughout the test, and from the start of T2 until Event B1 is reported, at least 85% ACK/NACK shall be detected.

For a test to be considered successful requirements on both event detection and percentage of transmitted ACK/NACKs have to be fulfilled simultaneously. The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.5.7 E-UTRAN FDD - UTRAN FDD Event Triggered Reporting under Fading Propagation Conditions for 5 MHz Bandwidth

A.8.5.7.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the E-UTRAN FDD- UTRAN FDD cell search requirements in clause 8.1.2.4.1.

The parameters of this test are the same as defined in Section A.8.5.1.1 except that the values of the parameters in the Table A.8.5.7.1-1 will replace the values of the corresponding parameters in A.8.5.1.1-1, and the values of the parameters in the Table A.8.5.7.1-2 will replace the values of the corresponding parameters in A.8.5.1.1-2.

Table A.8.5.7.1-1: General test parameters for E-UTRAN FDD-UTRAN FDD event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment		
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement	As specified in clause A.3.1.1.1.		
		Channel R.5 FDD			
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.1.		
(E-UTRAN FDD)		Channel R.11 FDD			
E-UTRA Channel Bandwidth	MHz	5			
(BW _{channel})					
NOTE 1: See Table A.8.5.1.1-1 for the other parameters.					
NOTE 2. This test is according to the principle defined in Section A 3.7.2					

NOTE 2: This test is according to the principle defined in Section A.3.7.2.

Table A.8.5.7.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for event triggered reporting of UTRAN FDD cell under fading propagation conditions

Parameter	Unit	Cell 1			
		T1	T2		
BW _{channel}	MHz	5			
OCNG Pattern defined in		OP.15 FDD			
A.3.2.1.15					
NOTE: See Table A.8.1.3.1-2 for the other parameters.					

A.8.5.7.2 Test Requirements

The test requirements defined in Section A.8.5.1 shall apply to this test case.

A.8.5.8 E-UTRA FDD InterRAT UTRA FDD correct reporting of measurement events with reduced performance group configured, non DRX

A.8.5.8.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the E-UTRA FDD-UTRA FDD inter-RAT cell search requirements in clause 8.1.2.4.1.

The test parameters are given in Tables A.8.5.8.1-1 and A.8.5.8.1-2. In this test, there are two cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2, 3 or 4. At the start of each repetition of T1, the test equipment provides signals for cell 1 (serving cell), and cells 2, 3 and 4 which are selected from the 8 cells which are configured in the UE neighbour cell list. Cells 2, 3

and 4 are chosen randomly, such that one frequency belongs to the normal performance group and two frequencies belong to the reduced performance group.

Table A.8.5.8.1-1: General test parameters for E-UTRAN FDD-UTRAN FDD for correct reporting of measurement events with reduced performance group configured, non DRX

Parameter	Unit	Value	Comment
UE configured E-UTRA RF		1	Serving cell and six UTRA FDD carrier
Channel Number			frequencies are used in the UE neighbour
			cell list. Frequencies 5,6 and 7 are indicated to have reduced performance
UE is configured UTRA RF		2, 3, 4, 5, 6, 7	indicated to have reduced performance
channel numbers		2, 3, 4, 5, 6, 7	
Test equipment		Cell 1 uses E-UTRA RF channel	Cells 2, 3 and 4 are chosen randomly,
configuration		number 1	such that one frequency belongs to the
- comgaration		Cells 2,3,4 are randomly selected	normal performance group and two
		to use different frequencies	frequencies belong to the reduced
		selected from UTRA RF channel	performance group
		numbers 2,3,4,5,6,7	
PDSCH parameters (E-		DL Reference Measurement	As specified in clause A.3.1.1.1.
UTRAN FDD)		Channel R.0 FDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.1.
parameters		Channel R.6 FDD	
(E-UTRAN FDD)			
Correlation Matrix and		1x2 low	
Antenna Configuration		0.11.4	0 1141
Active cell		Cell 1	Cell 1 is on RF channel number 1
Time offset with respect to cell1		0	
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Inter-RAT (UTRA FDD)		CPICH Ec/lo	7.6 Specifica III 10 30.100 Gladac 0.1.2.1.
measurement quantity		01 1011 20/10	
b1-Threshold-UTRA	dB	-18	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Scaling factor for reduced		16	
performance group			
T1	S	5	
T2	S	155	

Table A.8.5.8.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for correct reporting of measurement events with reduced performance group configured, non DRX

Parameter	Unit	Ce	II 1
		T1	T2
E-UTRA RF Channel Number		1	
BW _{channel}	MHz	5MHz: N 10MHz: I	N _{RB} = 25 N _{RB} = 50
Correlation Matrix and			Low
Antenna Configuration			
OCNG Pattern defined in			
A.3.2.1.1 (OP.1 FDD)		OP.1	FDD
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB	()
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA ^{Note 1}	dB		
OCNG_RB ^{Note 1}	dB		
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4
\hat{E}_s/N_{oc}	dB	4	4
N_{oc}	dBm/15 kHz	-9	98
RSRP	dBm/15 kHz	-94	-94
SCH_RP	dBm/15 kHz	-94	-94
Propagation Condition		ETU	J70

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Table A.8.5.8.1-3: Cell specific test parameters for UTRAN FDD (cell # 2, 3 and 4) for correct reporting of measurement events with reduced performance group configured, non DRX

Parameter	Unit	Cell 2		Cell 3		Cell 4	
		T1	T2	T1	T2	T1	T2
		Cells 2 is			3 is	Cells 4 is	
		rand	omly	rand	omly	randomly	
		select	ted to	selec	ted to	select	ted to
		use di	fferent	use di	fferent	use di	fferent
UTRA RF Channel Number		freque			encies	freque	
OTTA IN Chamile Number		selecte			ed from	selecte	-
		UTR			UTRA RF		A RF
		chai			nnel	channel	
		num		numbers		numbers	
		2,3,4,5,6,7 2,3,4,5,6,7 2,3,4,5,6,7				5,6,7	
CPICH_Ec/lor	dB				0		
PCCPCH_Ec/lor	dB				2		
SCH_Ec/lor	dB				2		
PICH_Ec/lor	dB				5		
DPCH_Ec/lor	dB				/A		
OCNS				-0.9	941		
^ /		-	-1.8	-	-1.8	-	-1.8
\hat{I}_{or}/I_{oc}	dB	infinit		infinit		infinit	
		У		у		у	
I_{oc}	dBm/3.84	-70					
* OC	MHz						
			-14		-14		-14
CPICH_Ec/lo	dB	infinit		infinit		infinit	
		у у у					
Propagation Conditions Case 5 (Note 3)							
Notes TBD							

A.8.5.8.2 Test Requirements

The UE shall send Event B1 triggered measurement reports for cells 2, 3 and 4, with a measurement reporting delay less than 7.68s (cell 2) and 115,2s (cell 3 and 4) from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report.

A.8.6 E-UTRAN TDD - UTRAN FDD Measurements

A.8.6.1 E-UTRAN TDD - UTRAN FDD event triggered reporting under fading propagation conditions

A.8.6.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the E-UTRAN TDD- UTRAN FDD cell search requirements in clause 8.1.2.4.2.

The test parameters are given in Tables A.8.6.1.1-1, A.8.6.1.1-2 and A.8.6.1.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.6.1.1-1: General test parameters for E-UTRAN TDD-UTRAN FDD event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2.
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2.
Gap Pattern Id		1	As specified in TS 36.133 clause 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. Applicable to cell 1.
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211. Applicable to cell 1.
CP length		Normal	Applicable to cell 1.
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD) measurement quantity		CPICH Ec/Io	
b1-Threshold-UTRA	dB	-18	CPICH Ec/lo threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell list.
T1	s	5	
T2	S	6	

Table A.8.6.1.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for event triggered reporting of UTRAN FDD cell under fading propagation conditions

Parameter	Unit	Cell	1		
		T1	T2		
E-UTRA RF Channel Number		1			
BW _{channel}	MHz	10			
Correlation Matrix and		1x2 Lo	ow		
Antenna Configuration					
OCNG Pattern defined in					
A.3.2.2.1 (OP.1 TDD)		OP.1 T	DD		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB	_			
PHICH_RB	dB	0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4		
\hat{E}_s/N_{oc}	dB	4	4		
N_{oc}	dBm/15 kHz	-98			
RSRP	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94	-94		
Propagation Condition		ETU7	70		

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Table A.8.6.1.1-3: Cell specific test parameters for UTRAN FDD (cell # 2) for event triggered reporting of UTRAN FDD cell under fading propagation conditions

Parameter	Unit	Cell 2			
		T1	T2		
UTRA RF Channel Number		1			
CPICH_Ec/lor	dB	-10			
PCCPCH_Ec/lor	dB	-12			
SCH_Ec/lor	dB	-12			
PICH_Ec/lor	dB	-15			
DPCH_Ec/lor	dB	N/A			
OCNS		-0.941			
\hat{I}_{or}/I_{oc}	dB	-Infinity	-1.8		
I_{oc}	dBm/3.84 MHz	-70			
CPICH_Ec/lo	dB	-Infinity -14			
Propagation Condition		Case 5 (No	ote 3)		

Note 1: The DPCH level is controlled by the power control loop.

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal

to lor.

Note 3: Case 5 propagation conditions are defined in Annex A of TS 25.101.

A.8.6.1.2 Test Requirements

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 4800 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.6.2 E- UTRAN TDD - UTRAN FDD identification of a new CGI of UTRAN cell using autonomous gaps

A.8.6.2.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of UTRA cell with autonomous gaps in clause 8.1.2.4.18.

The test parameters are given in Tables A.8.6.2.1-1, A.8.6.2.1-2 and A.8.6.2.1-3 below. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-frequency monitoring.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event B1. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE.

Table A.8.6.2.1-1: General test parameters for E-UTRAN TDD - UTRAN FDD identification of a new CGI of UTRAN cell using autonomous gaps

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement	As specified in clause A.3.1.1.2.
		Channel R.0 TDD	
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement	As specified in clause A.3.1.2.2.
(E-UTRAN TDD)		Channel R.6 TDD	
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211.
			Applicable to cell 1.
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211.
			Applicable to cell 1.
CP length		Normal	Applicable to cell 1.
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD)		CPICH Ec/lo	
measurement quantity			
b1-Threshold-UTRA	dB	-18	CPICH Ec/lo threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
SIB3_REP	Frames	32	Applicable for cell 2 SIB3 scheduling.
SIB3 SEG_COUNT		1	Applicable for cell 2 SIB3 scheduling.
si-RequestForHO		TRUE	As specified in clause 5.5.3.1 in TS 36.331.
Monitored UTRA FDD cell list size		12	UTRA cells on UTRA RF channel 1 provided
			in the cell list.
CSG id (of cell 2)		Set to any non-empty value	
T1	S	5	
T2	S	≤10	
T3	S	5	

Table A.8.6.2.1-2: Cell specific test parameters for cell #1 E-UTRAN TDD - UTRAN FDD identification of a new CGI of UTRAN cell using autonomous gaps

Parameter	Unit	Cell 1	
		T1	T2
E-UTRA RF Channel Number		1	
BW _{channel}	MHz	10	
OCNG Pattern defined in			
A.3.2.2.1 (OP.1 TDD)		OP.1 TD	D
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB	_	
PHICH_RB	dB	0	
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA ^{Note 1}	dB		
OCNG_RB ^{Note 1}	dB		
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4
$N_{oc}^{ m Note~3}$	dBm/15 kHz	-98	
\hat{E}_s/N_{oc}	dB	4	4
RSRP Note 4	dBm/15 kHz	-94	-94
SCH_RP	dBm/15 kHz	-94	-94
Propagation Condition		AWĠN	

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be

Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.6.2.1-3: Cell specific test parameters for cell #2 E-UTRAN TDD - UTRAN FDD identification of a new CGI of UTRAN cell using autonomous gaps

Parameter	Unit	Cell 2				
		T1	T2			
UTRA RF Channel Number		1				
CPICH_Ec/lor	dB	-10				
PCCPCH_Ec/lor	dB	-12				
SCH_Ec/lor	dB	-12				
PICH_Ec/lor	dB	-15				
DPCH_Ec/lor	dB	N/A				
OCNS		-0.94	1			
\hat{I}_{or}/I_{oc}	dB	-∞	0.02			
I_{oc}	dBm/3.84 MHz	-70				
CPICH_Ec/Io ^{Note 3}	dB	-∞ -13				
Propagation Condition		AWGI	N			

Note 1: The DPCH level is controlled by the power control loop.

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or} .

Note 3: This gives an SCH Ec/lo of -15dB

A.8.6.2.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within [1965] milliseconds from the start of T3.

Test requirement = RRC Procedure delay + Tidentify_CGI, UTRAN FDD + reporting delay

- = 50 + [630] + 40*32 + 2ms from the start of T3
- = [1962] ms, allow [1965] ms.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.6.3 E-UTRA TDD InterRAT UTRA FDD correct reporting of measurement events with reduced performance group configured, non DRX

A.8.6.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the E-UTRA TDD-UTRA FDD inter-RAT cell search requirements in clause 8.1.2.4.2.

The test parameters are given in Tables A.8.6.3.1-1 and A.8.6.3.1-2. In this test, there are two cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2, 3 or 4. At the start of each repetition of T1, the test equipment provides signals for cell 1 (serving cell), and cells 2, 3 and 4 which are selected from the 8 cells which are configured in the UE neighbour cell list. Cells 2, 3 and 4 are chosen randomly, such that one frequency belongs to the normal performance group and two frequencies belong to the reduced performance group.

Table A.8.6.3.1-1: General test parameters for E-UTRAN TDD-UTRAN FDD for correct reporting of measurement events with reduced performance group configured, non DRX

Parameter	Unit	Value	Comment
UE configured E-UTRA RF		1	Serving cell and seven UTRA FDD carrier
Channel Number			frequencies are used in the UE neighbour
			cell list. Frequencies 5,6 and 7 are
			indicated to have reduced performance
UE is configured UTRA RF		2, 3, 4, 5, 6, 7,8	
channel numbers			
Test equipment		Cell 1 uses E-UTRA RF channel	Cells 2, 3 and 4 are chosen randomly,
configuration		number 1	such that one frequency belongs to the
		Cells 2,3,4 are randomly selected	normal performance group and two
		to use different frequencies	frequencies belong to the reduced
		selected from UTRA RF channel	performance group
DD0011 : /F		numbers 2,3,4,5,6,7,8	A
PDSCH parameters (E-		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2.
UTRAN TDD) PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.2
parameters		Channel R.6 TDD	As specified in clause A.S.1.2.2
(E-UTRAN TDD)		Channel R.6 100	
Correlation Matrix and		1x2 low	
Antenna Configuration		TAZ IOW	
Special subframe		6	As specified in table 4.2-1 in TS 36.211.
configuration		ů	Applicable to cell 1
Uplink-downlink		1	As specified in table 4.2-2 in TS 36.211.
configuration		•	Applicable to cell 1
Active cell		Cell 1	Cell 1 is on RF channel number 1
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Inter-RAT (UTRA FDD)		CPICH Ec/lo	·
measurement quantity			
b1-Threshold-UTRA	dB	-18	CPICH Ec/lo threshold for event B1
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Scaling factor for reduced		16	
performance group			
T1	S	5	
T2	S	155	

Table A.8.6.3.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for correct reporting of measurement events with reduced performance group configured, non DRX

Parameter	Unit	Cell	1	
		T1	T2	
E-UTRA RF Channel Number		1		
BW _{channel}	MHz	10		
Correlation Matrix and		1x2 L	_OW	
Antenna Configuration				
OCNG Pattern defined in				
A.3.2.1.1 (OP.1 FDD)		OP.1 I	FDD	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB]		
PHICH_RA	dB			
PHICH_RB	dB	0		
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
\hat{E}_{s}/I_{ot}	dB	4	4	
\hat{E}_s/N_{oc}	dB	4	4	
N_{oc}	dBm/15 kHz	-98		
RSRP	dBm/15 kHz	-94	-94	
SCH_RP	dBm/15 kHz	-94	-94	
Propagation Condition		ETU	70	

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Table A.8.6.3.1-3: Cell specific test parameters for UTRAN FDD (cell # 2, 3 and 4) for correct reporting of measurement events with reduced performance group configured, non DRX

Parameter	Unit	Cell 2		Cell 3		Cell 4	
		T1	T2	T1	T2	T1	T2
		Cells 2 is			3 is	Cells 4 is	
		rand	omly	rand	omly	rand	omly
		select	ted to	selec	ted to	select	ted to
		use di	fferent	use di	fferent	use di	ferent
UTRA RF Channel Number			encies		encies	freque	
OTTO THE CHAINE I VAIN DE		selecte			ed from	selecte	
		UTR			A RF	UTRA RF	
			nnel		nnel	chai	
		num		numbers		numbers	
		2,3,4,5,6,7 2,3,4,5,6,7 2,3,4,5,6,7				5,6,7	
CPICH_Ec/lor	dB			-	0		
PCCPCH_Ec/lor	dB				2		
SCH_Ec/lor	dB				2		
PICH_Ec/lor	dB				5		
DPCH_Ec/lor	dB				/A		
OCNS				-0.9	941		
^ /		-	-1.8	-	-1.8	-	-1.8
\hat{I}_{or}/I_{oc}	dB	infinit		infinit		infinit	
		У		у		у	
I_{oc}	dBm/3.84	-70					
- oc	MHz						
			-14		-14		-14
CPICH_Ec/lo	dB	infinit		infinit		infinit	
		у у у					
Propagation Conditions		Case 5 (Note 3)					
Notes TBD							

A.8.6.3.2 Test Requirements

The UE shall send Event B1 triggered measurement reports for cells 2, 3 and 4, with a measurement reporting delay less than 7.68s (cell 2) and 115,2s (cell 3 and 4) from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report.

A.8.7 E-UTRAN TDD – UTRAN TDD Measurements

A.8.7.1 E-UTRAN TDD to UTRAN TDD cell search under fading propagation conditions

A.8.7.1.1 Test Purpose and Environment

A.8.7.1.1.1 Void

A.8.7.1.1.2 1.28 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the E-UTRA TDD to UTRA TDD cell search requirements in clause 8.1.2.4.3 under fading propagation conditions.

This test scenario comprised of 1 E-UTRA TDD PCell, and 1 UTRA TDD cell to be searched. Test parameters are given in Table A.8.7.1.1.2-1, A.8.7.1.1.2-2, and A.8.7.1.1.2-3. Gap pattern configuration #0 as defined in table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.7.1.1.2-1: General test parameters for E-UTRA TDD to UTRA(1.28 Mcps TDD OPTION) cell search in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement	As specified in
		Channel R.0 TDD	clause A.3.1.1.2
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in
parameters		Channel R.6 TDD	clause A.3.1.2.2
Active cell		Cell 1	E-UTRA TDD cell
Neighbour cell		Cell 2	UTRA 1.28Mcps TDD Cell
Gap Pattern Id		0	As specified in TS 36.133
			clause 8.1.2.1.
Uplink-downlink configuration of		1	As specified in table 4.2.2 in
cell 1			TS 36.211
Special subframe configuration of		6	As specified in table 4.2.1 in
cell 1			TS 36.211
CP length of cell 1		normal	
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Time offset between cells		3 ms	Asynchronous cells
Ofn	dB	0	
Thresh	dBm	-87	
T1	S	5	
T2	S	10	

Table A.8.7.1.1.2-2: Cell specific test parameters for cell search E-UTRA TDD to UTRA TDD test case (cell 1)

Parameter	Unit	Ce	II 1		
		T1	T2		
E-UTRA RF Channel		•	1		
Number					
BW _{channel}	MHz	1	0		
Correlation Matrix and		1x2	Low		
Antenna Configuration					
OCNG Pattern defined in		OP 1	TDD		
A.3.2.2.1 (OP.1 TDD)		01.1	100		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0	0		
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note1}	dB				
OCNG_RB ^{Note1}	dB				
\hat{E}_{s}/I_{ot}	dB	9	9		
\hat{E}_s/N_{oc}	dB	9	9		
N_{oc}	dBm/15kHz	-6	98		
RSRP	dBm/15kHz	-89	-89		
SCH_RP	dBm/15kHz	-89	-89		
Propagation Condition		ETI	J70		
Note 1: OCNC shall be used such that call is fully allocated and a					

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Table A.8.7.1.1.2-3: Cell specific test parameters for cell search E-UTRA TDD to UTRA TDD test case (cell 2)

Parameter	Unit	Cell 2 (UTRA)					
Timeslot Number		0 Γ			0 DwPTS		PTS
		T1	T2	T1	T2		
UTRA RF Channel Number NOTE1		Channel 2					
PCCPCH_Ec/lor	dB	-3	-3				
DwPCH_Ec/lor	dB			0	0		
OCNS_Ec/lor ^{NOTE2}	dB	-3	-3				
\hat{I}_{or}/I_{oc}	dB	-inf	5	-inf	5		
I_{oc}	dBm/1.28 MHz	-80					
PCCPCH RSCP	dBm	-inf	-78	n.a.	n.a.		
Propagation Condition		Case 3 ^{NOTE3}					

Note 1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to $I_{\rm or}$.

Note 3: Case 3 propagation conditions are defined in Annex B of TS 25.102

A.8.7.1.1.3 Void

A.8.7.1.2 Test Requirements

A.8.7.1.2.1 Void

A.8.7.1.2.2 1.28 Mcps TDD option

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 6400 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.7.1.2.3 Void

A.8.7.2 E-UTRAN TDD-UTRAN TDD cell search when DRX is used under fading propagation conditions

A.8.7.2.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These tests will partly verify the E-UTRAN TDD to UTRAN TDD inter-RAT cell search requirements when DRX is used in clause 8.1.2.4.3.2 under fading propagation conditions.

The common test parameters are given in Tables A.8.7.2.1-1, A.8.7.2.1-2 and A.8.7.2.1-3. DRX configuration for Test1 and Test2 are given in Table A.8.7.2.1-4 and time alignment timer and scheduling request related parameters in Table A.8.7.2.1-5. In these tests, there are two cells, 1 E-UTRAN TDD PCell and 1 UTRAN TDD cell to be searched, Gap pattern configuration # 0 as defined in table 8.1.2.1-1 is provided.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignmend. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B1 is used. The tests consist of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.7.2.1-1: General test parameters for E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation conditions

Parameter	Unit	Test 1	Test 2	Comment
		Va	lue	

	1	T = 1 = 1	
PDSCH parameters		DL Reference Measurement	As specified in clause A.3.1.1.2. Note that
		Channel R.0 TDD	UE may only be allocated at On Duration
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.2.
parameters		Channel R.6 TDD	
Active cell		Cell 1	E-UTRAN TDD cell
Neighbour cell		Cell 2	UTRAN 1.28Mcps TDD cell
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Uplink-downlink		1	As specified in TS 36.211 clause 4.2 Table
configuration			4.2-2
Special subframe		6	As specified in table 4.2-1 in TS 36.211.
configuration			The same configuration in both cells
PRACH configuration		4	As specified in table 5.7.1-3 in TS 36.211
CP length of cell 1		Normal	
Ofn	dB	0	
Thresh	dBm	-83	Absolute P-CCPCH RSCP threshold for
			event B1
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
Access Barring Information	-	Not Sent	No additional delays in random access
G			procedure.
DRX		ON	DRX related parameters are defined in
			Table A.8.4.2.1-3
Time offset between cells		3 ms	Asynchronous cells
T1	S	5	
T2	S	8 30	

Table A.8.7.2.1-2: Cell specific test parameters for E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation conditions(cell 1)

Parameter	Unit	Се	II 1
		T1	T2
E-UTRA RF Channel		,	1
Number			
BWchannel	MHz	1	0
Correlation Matrix and		1x2	Low
Antenna Configuration			
OCNG Patterns defined		OP.1	TDD
in A.3.2.2.1 (OP.1 TDD)			
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB	0	0
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RANote1	dB		
OCNG_RBNote1	dB		
\hat{E}_s/I_{ot}	dB	4	4
\hat{E}_s/N_{oc}	dB	4	4
N _{oc} Note 2	dBm/15kHz	-98	
I RSRP	dBm/15kHz	-94	-94
SCH_RP Note 3	dBm/15kHz	-94	-94
Propagation Condition		ETI	J70

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power

for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.7.2.1-3: Cell specific test parameters for E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation conditions(cell 2)

Pa	rameter	Unit Cell 2 (UTRA)				
Timeslot N	Number		0		Dw	PTS
			T1	T2	T1	T2
UTRA RF Number N		: (:h			nel 2	
PCCPCH	_Ec/lor	dB	-3	-3		
DwPCH_E		dB			0	0
OCNS_E	c/lor ^{NOTE2}	dB	-3	-3		
\hat{I}_{or}/I_{oc}		dB	-inf	9	-inf	9
I_{oc}		dBm/1.28 -80 MHz				
PCCPCH	RSCP	dBm	-inf	-74	n.a.	n.a.
Propagation Condition	on			Case 3	NOTE3	
Note 1: Note 2: Note 3:	ote 1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number. The power of the OCNS channel that is added shall make the total power from the cell to be equal to lor.					e the

Table A.8.7.2.1-4: drx-Configuration to be used in E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation conditions

Field	Test1	Test2	Comment
Field	Value	Value	
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Table A.8.7.2.1-5: TimeAlignmentTimer and sr-ConfigIndex -Configuration to be used in E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation conditions

Field	Test1	Test2	Comment
rieid	Value	Value	
TimeAlignmentTimer	sf500	sf500	For further information see clause 6.3.2 in TS 36.331.
sr-ConfigIndex	2	2	For further information see clause 6.3.2 in TS 36.331 and 10.1 in TS 36.213.

A.8.7.2.2 Test Requirements

In Test1 the UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 6400ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE send the measurement report on PUSCH.

In Test2 the UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 25.6s from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.

NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event B1 measurement report

A.8.7.3 E-UTRAN TDD - UTRAN TDD SON ANR cell search reporting in AWGN propagation conditions

A.8.7.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of the strongest UTRAN TDD cell for SON automatic neighbour relations. This test will partly verify the E-UTRAN TDD - UTRAN TDD cell search requirements for identification of a new UTRA TDD cell for SON given in clause 8.1.2.4.13.

In the measurement control information it is indicated to the UE that periodical reporting with the purpose 'reportStrongestCellsForSON' is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. Prior to the start of time period T1, an interRAT periodic measurement reporting configuration with purpose reportStrongestCellsForSON is configured, and linked to a UTRA measurement object corresponding to channel UARFCN 1. During time duration T1, the UE shall not have any timing information of cell 2.

A.8.7.3.2 Test Parameters

The test parameters are given in Tables A.8.7.3.1-1, A.8.7.3.1-2 and A.8.7.3.1-3.

Table A.8.7.3.1-1: General test parameters for E-UTRAN TDD-UTRAN TDD cell search reporting for SON ANR in AWGN propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Gap Pattern Id		1	As specified in TS 36.133 clause 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
UTRA RF Channel Number		1	One UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
Uplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
Inter-RAT (UTRA TDD) measurement quantity		P-CCPCH RSCP	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA TDD cell list size		None	No explicit neighbour list is provided to the UE
T1	S	>5	During T1, cell 2 shall be powered off, and during the off time the primary scrambling code shall be changed, The intention is to ensure that cell 2 has not been detected by the UE prior to the start of period T2.
T2	S	14	

Table A.8.7.3.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for UTRAN TDD cell search for SON ANR under AWGN propagation conditions

Parameter	Unit	Cell 1		
		T1 T2		
E-UTRA RF Channel Number		1		
BW _{channel}	MHz	1	0	
OCNG Patterns defined in		OR 1	TDD	
A.3.2.2.1 (OP.1 TDD)		UP.1	טטו	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB		•	
PHICH_RB	dB		0	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	dB	4	4	
$N_{oc}^{ m Note 3}$	dBm/15 kHz	-98		
\hat{E}_s/N_{oc}	dB	4	4	
RSRP Note 4	dBm/15 kHz	-94	-94	
SCH_RP	dBm/15 kHz	-94 -94		
Propagation Condition		AWGN		
Note 1: OCNG shall be used	such that both c	ells are fully allocated	and a constant	
total transmitted power	er spectral densi	ity is achieved for all C	OFDM symbols.	
Note 2: The resources for uplink transmission are assigned to the UE prior to the start				
of time period T2.				

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant—over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.7.3.1-3: Cell specific test parameters for UTRAN TDD (cell # 2) for UTRAN TDD cell search for SON ANR under AWGN propagation conditions

Parameter	Unit	Cell 2			
		T1 T2			
UTRA RF Channel number Note2			Chan	nel 2	
DL timeslot number		0	DwPTS	0	DwPTS
PCCPCH_Ec/lor	dB	-3		-3	
DwPCH_Ec/lor	dB	0			0
OCNS_Ec/lor	dB	-3		-3	
Îor/loc	dB	-Inf	inity		5
PCCPCH RSCP Note1	dBm	-Infinity	n.a.	-73	n.a.
lo Note1	dBm/1.28MHz	-Infinity -70.88			0.88
loc	dBm/1.28MHz	-75			
Propagation condition			AW	GN	

Note 1: PCCPCH RSCP and lo levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.

Note 2: In the case of multi-frequency network of 1.28 Mcps TDD, the UTRA RF Channel Number can be set for the primary frequency in this test.

A.8.7.3.3 Test Requirements

The UE shall send the first measurement report containing the physical cell identity of cell 2, with a measurement reporting delay less than 12800 ms from the beginning of time period T2.

The rate of correct measurement reports observed with this delay during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.7.4 E-UTRAN TDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

A.8.7.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct enhanced reporting of UTRAN TDD cells. This test will partly verify the Enhanced UTRA TDD cell identification requirements in clause 8.1.2.4.3.1.1a under AWGN propagation conditions.

The test parameters are given in Tables A.8.7.4.1-1, A.8.7.4.1-2 and A.8.7.4.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods of T1 and T2 respectively. During time period T1, measurement gaps are activated and an inter-RAT measurement reporting configuration is configured with linkage to a UTRA measurement object corresponding to UARFCN channel number 1. Prior to time duration T2, the UE shall not have any timing information of cell 2. Cell 2 is powered up at the beginning of T2.

Table A.8.7.4.1-1: General test parameters for E-UTRAN TDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2.
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2.
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
Time offset between cells	ms	3	Asynchronous cells
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
CP length		Normal	Applicable to cell 1
Uplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
UTRA RF Channel Number		1	One UTRA TDD carrier frequency is used.
Inter-RAT (UTRA TDD) measurement quantity		P-CCPCH RSCP	
Thresh	dBm	-83	Absolute P-CCPCH RSCP threshold for event B1
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA TDD cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell list
T1	S	5	
T2	S	2	

Table A.8.7.4.1-2: Cell specific test parameters for cell 1 in E-UTRAN TDD - UTRAN TDD enhanced cell identification test under AWGN propagation conditions

Parameter	Unit	Cell	1			
		T1	T2			
E-UTRA RF Channel Number		1				
BW _{channel}	MHz	10				
OCNG Pattern defined in						
A.3.2.2.1 (OP.1 TDD)		OP.1 T	TDD			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB	0				
PHICH_RB	dB					
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$\hat{E}_{\scriptscriptstyle \mathrm{s}}/I_{\scriptscriptstyle \mathrm{ot}}$	dB	4	4			
$N_{oc}^{ m Note 3}$	dBm/15 kHz	-98	3			
\hat{E}_s/N_{oc}	dB	4	4			
RSRP Note 4	dBm/15 kHz	-94	-94			
SCH_RP	dBm/15 kHz	-94	-94			
Propagation Condition		AWGN				

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be

Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.7.4.1-3: Cell specific test parameters for cell 2 in E-UTRAN TDD - UTRAN TDD enhanced cell identification test under AWGN propagation conditions

Parameter	Unit	Cell 2 (UTRA TDD)			
Timeslot Number		(0	Dw	PTS
		T1	T2	T1	T2
UTRA RF Channel Number Note1			Char	nel 1	
P-CCPCH_Ec/lor	dB	-4.77	-4.77		
DwPCH_Ec/lor	dB			0	0
OCNS_Ec/lor ^{Note2}	dB	-1.76	-1.76		
\hat{I}_{or}/I_{oc}	dB	-inf	8	-inf	8
I_{oc}	dBm/1.28 MHz	-80			
P-CCPCH RSCP Note3	dBm	-inf	-76.77	n.a.	n.a.
P-CCPCH_Ec/Io Note3	dB	-inf	-5.41	n.a.	n.a.
DwPCH_Ec/Io Note3	dB	n.a.	n.a.	-inf	-0.64
Propagation Condition		AWGN			

Note 1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}.

Note 3: P-CCPCH RSRP, PCCPCH_Ec/Io and DwPCH_Ec/Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.7.4.2 Test Requirements

The UE shall send the first measurement report containing the primary scrambling code of cell 2, with a measurement reporting delay less than 1120 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct measurement reports observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH

A.8.7.5 E-UTRA TDD InterRAT UTRA TDD correct reporting of measurement events with reduced performance group configured, non DRX

A.8.7.5.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the E-UTRAN TDD- UTRAN TDD measurement requirements for increased UE carrier monitoring in clause 8.1.2.4.3.

The test parameters are given in Tables A.8.7.5.1-1, A.8.7.5.1-2 and A.8.7.5.1-3. In this test, there are 4 cells on different carrier frequencies and gap pattern configuration #0 as defined in table A.8.7.5.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Events B1 is used. The test consists of two successive time periods for every reptitation, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of neighoubour cells. At the start of each repetition of T1, the test equipment provides signals for cell 1 (serving cell), and cells 2, 3 and 4 which are selected from the 7 cells which are configured in the UE neighbour cell list. Cells 2, 3 and 4 are chosen randomly, such that one frequency belongs to the normal performance group and two frequencies belong to the reduced performance group.

Table A.8.7.5.1-1: General test parameters for E-UTRA TDD InterRAT UTRA TDD correct reporting of measurement events with reduced performance group configured, non DRX

Parameter	Unit	Value	Comment
UE configured E-		1	Serving cell
UTRA RF Channel			
Number			
UE is configured		2, 3, 4, 5, 6, 7, 8	7 UTRA TDD carrier frequencies are used
UTRA RF channel			in the UE neighbour cell list. Frequencies
numbers			5,6, 7,and 8 are indicated to have reduced
		O II 4	performance
Test equipment		Cell 1 uses E-UTRA RF cannel	
configuration		number 1	
		Cell 2,3,4 are randomly selected	
		to use different frequencies selected from frequencies	
		2,3,4,5,6,7, 8	
Active cell		2,3,4,3,6,7, 6 Cell 1	E-UTRA TDD cell
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
CP length of cell 1		normal	7.5 Specifica III 10 50.155 clause 0.1.2.1.
Inter-RAT		UTRA TDD PCCPCH RSCP	
measurement		OTTO TEE TOOL OTT NOO!	
quantity			
B1 Threshold	dBm	-75	UTRA TDD PCCPCH RSCP threshold for
			event B1
Hysteresis	dB	0	
Ofn	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Scaling factor		8	
configurations			
T1	S	5	
T2	S	205	

Table A.8.7.5.1-2: Cell specific test parameters for E-UTRA TDD InterRAT UTRA TDD correct reporting of measurement events with reduced performance group configured, non DRX (cell #1)

Parameter	Unit	Се	Cell 1			
		T1 T2				
E-UTRA RF Channel Number		,	1			
BW _{channel}		5MHz: N	N _{RB} = 25			
		10MHz: $N_{RB} = 50$				
Uplink-downlink configuration		,	1			
of cell 1 as specified in table						
4.2.2 in TS 36.211						
Special subframe configuration		(3			
of cell 1 as specified in table						
4.2.1 in TS 36.211						
PDSCH parameters: DL		5MHz: F	R.4 TDD			
Reference Measurement		10MHz:	R.0 TDD			
Channel as specified in						
clause A.3.1.1.2						
PCFICH/PDCCH/PHICH		5MHz: R	11 TDD			
parameters: DL Reference			R.6 TDD			
Measurement Channel as						
specified in clause A.3.1.2.2						
OCNG Pattern defined in		5MHz: O	P.9 TDD			
A.3.2.2.1 and A.3.2.2.9			P.1 TDD			
PBCH_RA	dB					
PBCH_RB	dB					
PSS RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	()			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG RB ^{Note 1}	dB					
-	dBm/15 kHz	_C	98			
N_{oc}	UDITI/ TO KITZ	-5	,0			
\hat{E}_s/N_{oc}	dB	4	4			
E_s/W_{oc}						
$\hat{E}_{_s}/I_{_{ot}}$ Note 3	dB	4	4			
L _s /L _{ot}						
RSRP Note 3	dBm/15 kHz	-94	-94			
SCH_RP Note 3	dBm/15 kHz	-94	-94			
lo Note 3	dBm/Ch BW	-64.70	-64.70			
		+10log	+10log			
		(N _{RB,c} /50)	(N _{RB,c} /50)			
Propagation Condition			J70			
Correlation Matrix and		1x2 Low				
			-			
Antenna Configuration		and fully allocated and a sou				

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Es/lot, RSRP, SCH_RP and lo have been derived from other parameters for information purposes.

They are not settable parameters themselves.

Table A.8.7.5.1-3: Cell specific test parameters for E-UTRA TDD InterRAT UTRA TDD correct reporting of measurement events with reduced performance group configured, non DRX (cell #2, cell #3 and cell #4)

Parameter	Unit	Cell 2				Cell 3			Cell 4				
		Т	1		T2		T1	T2		T1			T2
Timeslot Number		0 D	wPTS	0	DwPTS	0	DwPTS	0	DwPTS	0	DwPTS	0	DwPTS
UTRA RF		Rand	lomly se	elected fr	om 2,3,4	Ra	andomly se	lected fro	om 5,6,7,8	Ra	andomly se	ected fro	m 5,6,7,8
Channel Number		such	that cell	2 is in the	ne normal	suc	ch that cell	3 is in th	e reduced	su	ch that cell	4 is in the	e reduced
(NOTE1)			perform	nance gr	oup		perforr	nance gr	oup		erformance		
										cł	nannel is di	fferent fro	om Cell 3
											RF	channel.	
PCCPCH_Ec/lor	dB	-Inf	inity	-3			-Infinity	-3			-Infinity	-3	
DwPCH_Ec/lor	dB	-Inf	inity		0		-Infinity		0		-Infinity		0
OCNS_Ec/lor		-Inf	inity	-3			-Infinity	-3			-Infinity	-3	
\hat{I}_{or}/I_{oc}	dB	-Inf	inity	9			-Infinity	9			-Infinity	9	
I_{oc}	dBm/1.28 MHz	-70				-70				-70			
PCCPCH_RSCP	dB	-Inf	inity	-64			-Infinity	-64			-Infinity	-64	
lo Note 3	dBm/1.28	-70	0.00	-			-70.00	-			-70.00	-	
	MHz			60.49				60.49				60.49	
Propagation Condition			Case	3 (NOTE	2)		Case	3 (NOTE	2)		Case	3 (NOTE	2)

NOTE1: The DPCH of the cell is located in a timeslot other than 0.

NOTE2: Case 3 propagation conditions are specified in TS25.102 Annex B

NOTE3: PCCPCH_RSRP and lo levels have been derived from other parameters for information purposes. They are not settable

parameters themselves

A.8.7.5.2 Test Requirements

The UE shall send Event B1 triggered measurement reports for cells 2, 3 and 4, with a measurement reporting delay less than 21.95s (cell 2) and 204.8s (cell 3 and 4) from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report.

A.8.7A TBD

A.8.7A.1 E-UTRA FDD InterRAT UTRA TDD correct reporting of measurement events with reduced performance group configured, non DRX

A.8.7A.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the E-UTRAN FDD- UTRAN TDD measurement requirements for increased UE carrier monitoring in clause 8.1.2.4.4.

The test parameters are given in Tables A.8.7A.1.1-1, A.8.7A.1.1-2 and A.8.7A.1.1-3. In this test, there are 4 cells on different carrier frequencies and gap pattern configuration #0 as defined in table A.8.7A.1.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Events B1 is used. The test consists of two successive time periods for every reptitation, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of neighoubour cells. At the start of each repetition of T1, the test equipment provides signals for cell 1 (serving cell), and cells 2, 3 and 4 which are selected from the 7 cells which are configured in the UE neighbour cell list. Cells 2, 3 and 4 are chosen randomly, such that one frequency belongs to the normal performance group and two frequencies belong to the reduced performance group.

Table A.8.7A.1.1-1: General test parameters for E-UTRA FDD InterRAT UTRA TDD correct reporting of measurement events with reduced performance group configured, non DRX

Parameter	Unit	Value	Comment
UE configured E-		1	Serving cell
UTRA RF Channel			
Number			
UE is configured		2, 3, 4, 5, 6, 7, 8	7 UTRA TDD carrier frequencies are used
UTRA RF channel			in the UE neighbour cell list. Frequencies
numbers			5,6, 7,and 8 are indicated to have reduced performance
Test equipment		Cell 1 uses E-UTRA RF cannel	
configuration		number 1	
		Cell 2,3,4 are randomly selected	
		to use different frequencies	
		selected from frequencies	
		2,3,4,5,6,7, 8	
Active cell		Cell 1	E-UTRA FDD cell
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
CP length of cell 1		normal	
Inter-RAT		UTRA TDD PCCPCH RSCP	
measurement			
quantity			
B1 Threshold	dBm	-75	UTRA TDD PCCPCH RSCP threshold for
Lhistoropia	dB	0	event B1
Hysteresis		0	
TimeToTrigger	S	0	LOCK :
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Scaling factor		8	
configurations			
T1	S	5	
T2	S	205	

Table A.8.7A.1.1-2: Cell specific test parameters for E-UTRA FDD InterRAT UTRA TDD correct reporting of measurement events with reduced performance group configured, non DRX (cell #1)

Parameter	Unit	Cell 1				
		T1	T2			
E-UTRA RF Channel Number		1				
BW _{channel}		5MHz: $N_{RB} = 25$				
		10MHz: N	I _{RB} = 50			
PDSCH parameters: DL		5MHz: R	.5 FDD			
Reference Measurement		10MHz: F	R.0 FDD			
Channel as specified in						
clause A.3.1.1.1						
PCFICH/PDCCH/PHICH		5MHz: R.	11 FDD			
parameters: DL Reference		10MHz:R	1.6 FDD			
Measurement Channel as						
specified in clause A.3.1.2.1						
OCNG Pattern defined in		5MHz: OP	1.15 FDD			
A.3.2.1.1 and A.3.2.1.15		10MHz:OI	P.1 FDD			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0				
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
N_{oc}	dBm/15 kHz	-98	3			
\hat{E}_s/N_{oc}	dB	4	4			
$\hat{E}_{_{s}}/I_{_{ot}}$ Note 3	dB	4	4			
RSRP Note 3	dBm/15 kHz	-94	-94			
SCH_RP Note 3	dBm/15 kHz	-94	-94			
lo Note 3	dBm/Ch BW	-64.76	-64.76			
		+10log	+10log			
		(N _{RB,c} /50)	(N _{RB,c} /50)			
Propagation Condition		ETU				
Correlation Matrix and		1x2 Low				
Antenna Configuration						

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Es/lot, RSRP, SCH_RP and lo have been derived from other parameters for information purposes.

They are not settable parameters themselves.

Table A.8.7A.1.1-3: Cell specific test parameters for E-UTRA FDD InterRAT UTRA TDD correct reporting of measurement events with reduced performance group configured, non DRX (cell #2, cell #3 and cell #4)

Parameter	Unit	Cell 2				Cell 3			Cell 4		
		T1		T2	T1	T2	2	T1		T2	
Timeslot Number		0 DwPTS	0	DwPTS	0 DwPTS	0	DwPTS	0 DwPTS	0	DwPTS	
UTRA RF		Randomly s	elected fr	rom 2,3,4	Randomly s	selected from	5,6,7,8	Randomly se	lected fro	m 5,6,7,8	
Channel Number		such that ce	II 2 is in th	ne normal	such that ce	ell 3 is in the	reduced	such that cell	4 is in the	e reduced	
(NOTE1)		perfor	mance gr	oup	perfo	rmance grou	р	performance			
								channel is di			
								RF	channel.		
PCCPCH_Ec/lor	dB	-Infinity	-3		-Infinity	-3		-Infinity	-3		
DwPCH_Ec/lor	dB	-Infinity		0	-Infinity		0	-Infinity		0	
OCNS_Ec/lor		-Infinity	-3		-Infinity	-3		-Infinity	-3		
\hat{I}_{or}/I_{oc}	dB	-Infinity	9		-Infinity	9		-Infinity	9		
I_{oc}	dBm/1.28 MHz		-70			-70			-70		
PCCPCH_RSCP	dB	-Infinity	-64		-Infinity	-64		-Infinity	-64		
lo Note 3	dBm/1.28	-70.00	-		-70.00	-60.49		-70.00	-		
	MHz		60.49						60.49		
Propagation Condition		Case	3 (NOTE	2)	Cas	e 3 (NOTE2)		Case	3 (NOTE	2)	

NOTE1: The DPCH of the cell is located in a timeslot other than 0.

NOTE2: Case 3 propagation conditions are specified in TS25.102 Annex B

NOTE3: PCCPCH_RSRP and lo levels have been derived from other parameters for information purposes. They are not settable

parameters themselves

A.8.7A.1.2 Test Requirements

The UE shall send Event B1 triggered measurement reports for cells 2, 3 and 4, with a measurement reporting delay less than 21.95s (cell 2) and 204.8s (cell 3 and 4) from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report.

A.8.8 E-UTRAN FDD – GSM Measurements

A.8.8.1 E-UTRAN FDD – GSM event triggered reporting in AWGN

A.8.8.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter-RAT (GSM) measurements. This test will partly verify the E-UTRAN FDD - GSM cell search requirements in clause 8.1.2.4.5.

The test parameters are given in Tables A.8.8.1.1-1, A.8.8.1.1-2 and A.8.8.1.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.8.1.1-1: General test parameters for E-UTRAN FDD-GSM event triggered reporting in AWGN

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1.
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on Absolute RF Channel Number 1 (GSM cell)
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
Inter-RAT (GSM) measurement quantity		GSM Carrier RSSI	
b1-Threshold-GERAN	dBm	-80	GSM Carrier RSSI threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored GSM cell list size		6 GSM neighbours including ARFCN 1	List of GSM cells provided before T2 starts.
T1	S	5	
T2	S	5	

Table A.8.8.1.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for event triggered reporting of GSM cell in AWGN

Parameter	Unit	Cel	l 1		
		T1	T2		
E-UTRA RF Channel Number		1			
BW _{channel}	MHz	10)		
OCNG Pattern defined in					
A.3.2.1.1 (OP.1 FDD)		OP.1	FDD		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB]			
PHICH_RB	dB	j			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
\hat{E}_{s}/I_{ot}	dB	4	4		
\hat{E}_s/N_{oc}	dB	4	4		
N _{oc}	dBm/15 kHz	-98			
RSRP	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94	-94		
Propagation Condition		AWGN			

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Table A.8.8.1.1-3: Cell specific test parameters for GSM (cell # 2) for event triggered reporting of GSM cell in AWGN

Parameter	Unit	Cell 2		
		T1	T2	
Absolute RF Channel Number		ARFNC 1		
RXLEV	dBm	-Infinity	-75	
GSM BSIC		N/A	Valid	

A.8.8.1.2 Test Requirements

The UE shall send one Event B1 triggered measurement report including BSIC of cell # 2, with a measurement reporting delay less than 3120 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.
- NOTE 2: The delay for GSM cell identification with BSIC verified is equal to 3120 ms, which is the sum of the event triggered measurement reporting delay and the initial BSIC identification delay.

The event triggered measurement reporting delay = 2*T_{Measurement Period, GSM} = 2* 480ms = 960ms.

Initial BSIC identification delay = 2160 ms.

A.8.8.2 E-UTRAN FDD-GSM event triggered reporting when DRX is used in AWGN

A.8.8.2.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These tests will partly verify the E-UTRAN FDD-GSM cell search requirements when DRX is used in clause 8.1.2.4.5.2.

In these tests, there are two cells, one E-UTRAN cell and one GSM cell, and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

The common test parameters are given in Table A.8.8.2.1-1. Cell specific test parameters are given in Table A.8.8.2.1-2 for E-UTRAN and in Table A.8.8.2.1-5 for GSM. DRX configuration for Test1 and Test2 are given in Table A.8.8.2.1-3 and time alignment timer and scheduling request related parameters in Table A.8.8.2.1-4.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B1 is used. The tests consist of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.8.2.1-1: General test parameters for E-UTRAN FDD-GSM event triggered reporting when DRX is used in AWGN

Parameter	Unit	Test 1	Test 2	Comment
		Value		
PDSCH parameters (E-		DL Reference Me	asurement	As specified in clause A.3.1.1.1.
UTRAN FDD)		Channel R.0 FDD		
PCFICH/PDCCH/PHICH		DL Reference Me		As specified in clause A.3.1.2.1.
parameters (E-UTRAN FDD)		Channel R.6 FDD)	
Gap Pattern Id		0		As specified in TS 36.133 clause 8.1.2.1.
Active cell		Cell 1		Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2		Cell 2 is on Absolute RF Channel Number
				1 (GSM cell)
CP length		Normal		Applicable to cell 1
E-UTRA RF Channel		1		One E-UTRA FDD carrier frequency is
Number				used.
E-UTRA Channel Bandwidth	MHz	1	0	
(BW _{channel})				
Inter-RAT (GSM)		GSM Car	rier RSSI	
measurement quantity	in.			00140 : 50014 - 114
B1-Threshold-GERAN	dBm	-80		GSM Carrier RSSI threshold for event B1.
Hysteresis	dB	0		
TimeToTrigger	S	0		
Filter coefficient		0		L3 filtering is not used
PRACH configuration		4		As specified in table 5.7.1-2 in TS 36.211
Access Barring Information	-	Not Sent		No additional delays in random access procedure.
DRX		ON		DRX related parameters are defined in Table A.8.8.2.1-3
Monitored GSM cell list size		6 GSM neighbours including ARFCN 1		List of GSM cells provided before T2 starts.
T1	S	5		
T2	S	5	45	

Table A.8.8.2.1-2: Cell specific test parameters for E-UTRAN FDD (cell #1) event triggered reporting of GSM cell when DRX is used in AWGN

Parameter	Unit	Cell 1		
		T1	T2	
E-UTRA RF Channel Number		1		
BW _{channel}	MHz	10		
OCNG Pattern defined in				
A.3.2.1.1 (OP.1 FDD)		OP.1 FI	DD	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB	_		
PHICH_RB	dB	0		
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			

$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4
$N_{oc}^{ m Note~2}$	dBm/15 kHz	-98	
RSRP Note 3	dBm/15 kHz	-94	-94
SCH_RP	dBm/15 kHz	-94	-94
\hat{E}_s/N_{oc}	dB	4	4
Propagation Condition		AWGN	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant

over subcarriers and time and shall be modelled as AWGN of appropriate power for $^{N}_{oc}$ to be fulfilled

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.8.2.1-3: drx-Configuration to be used in E-UTRAN FDD-GSM event triggered reporting when DRX is used in AWGN

Field	Test1	Test2	Comment
Field	Value	Value	
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	Disable	Disable	
Note: For further	information se	e clause 6.3.	2 in TS 36.331.

Table A.8.8.2.1-4: TimeAlignmentTimer and sr-ConfigIndex -Configuration to be used in E-UTRAN FDD-GSM event triggered reporting when DRX is used in AWGN

Field	Test1	Test2	Comment
rieid	Value	Value	
TimeAlignmentTimer	sf500	sf500	For further information see clause 6.3.2 in TS 36.331.
sr-ConfigIndex	0	0	For further information see clause 6.3.2 in TS 36.331 and clause 10.1 in TS 36.213.

Table A.8.8.2.1-5: Cell specific test parameters for GSM (cell # 2) for event triggered reporting of GSM cell when DRX is used in AWGN

Parameter	Unit	Cell 2		
		T1	T2	
Absolute RF Channel Number		ARFNC 1		
RXLEV	dBm	-Infinity	-75	
GSM BSIC		N/A	Valid	

A.8.8.2.2 Test Requirements

In Test1 the UE shall send one Event B1 triggered measurement report including BSIC of cell # 2, with a measurement reporting delay less than 3120 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE send the measurement report on PUSCH.

In Test2 the UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 42.8 seconds from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event B1 measurement report

A.8.8.3 E-UTRAN FDD – GSM event triggered reporting in AWGN with enhanced BSIC identification

A.8.8.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter-RAT (GSM) measurements with enhanced BSIC identification. This test will partly verify the E-UTRAN FDD - GSM cell search requirements in clause 8.1.2.4.5.1.2a

The test parameters are given in Tables A.8.8.3.1-1, A.8.8.1.1-2 and A.8.8.3.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. Prior time duration T1, the UE shall not have any timing information of cell 2. During time period T1, gaps are activated and an interRAT measurement reporting configuration is configured, and linked to a GSM measurement object including channel ARFCN 1. Cell 2 is powered up at the beginning of T2.

Table A.8.8.3.1-1: General test parameters for E-UTRAN FDD-GSM event triggered reporting in AWGN with enhanced BSIC identification

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1.
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on Absolute RF Channel Number 1 (GSM cell)
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
Inter-RAT (GSM) measurement quantity		GSM Carrier RSSI	
b1-Threshold-GERAN	dBm	-80	GSM Carrier RSSI threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored GSM cell list size		6 GSM neighbours including ARFCN 1	List of GSM cells provided before T2 starts.
T1	S	5	T1 ends at the end of the last TTI where the measurement configuration is given
T2	S	3	

Table A.8.8.3.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1) for event triggered reporting of GSM cell in AWGN with enhanced BSIC identification

Parameter	Unit	Cel	l 1		
		T1	T2		
E-UTRA RF Channel Number		1			
BW _{channel}	MHz	10)		
OCNG Pattern defined in					
A.3.2.1.1 (OP.1 FDD)		OP.1	FDD		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	dB	4	4		
\hat{E}_s/N_{oc}	dB	4	4		
N_{oc}	dBm/15 kHz	-98			
RSRP	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94	-94		
Propagation Condition		AWGN			

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Table A.8.8.3.1-3: Cell specific test parameters for GSM (cell # 2) for event triggered reporting of GSM cell in AWGN with enhanced BSIC identification

Parameter	Unit	Cell 2		
		T1	T2	
Absolute RF Channel Number		ARFCN 1		
RXLEV	dBm	-∞	-75	
GSM BSIC		N/A	Valid	

A.8.8.3.2 Test Requirements

The UE shall send one Event B1 triggered measurement report including BSIC of cell # 2, with a measurement reporting delay less than 2280 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE 1: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

NOTE 2: The delay for GSM cell identification with BSIC verified is equal to 2280 ms, which is the sum of the event triggered measurement reporting delay and the enhanced initial BSIC identification delay.

The event triggered measurement reporting delay = $2*T_{Measurement\ Period,\ GSM} = 2*480ms = 960ms$.

Initial BSIC identification delay = 1320 ms.

A.8.9 E-UTRAN FDD - UTRAN TDD measurements

A.8.9.1 E-UTRAN FDD - UTRAN TDD event triggered reporting in fading propagation conditions

A.8.9.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. The test will partly verify the E-UTRAN FDD - UTRAN TDD cell search requirements in clause 8.1.2.4.4 in fading environment.

The test parameters are given in Table A.8.9.1.1-1, A.8.9.1.1-2 and A.8.9.1.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.9.1.1-1: General test parameters for Event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.1
parameters		Channel R.6 FDD	
Active cell		Cell 1	E-UTRA FDD Cell 1
Neighbour cell		Cell 2	UTRA TDD Cell 2 is to be identified.
Gap Pattern Id		1	As specified in TS 36.133 section8.1.2.1.
			Measurement Gap Repetition Period =
			80ms
Inter-RAT measurement		UTRA TDD PCCPCH RSCP	
quantity			
Threshold other system	dBm	-75	UTRA TDD PCCPCH RSCP threshold for event B1.
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX			OFF
T1	S	5	
T2	S	15	

Table A.8.9.1.1-2: Cell specific test parameters for Event triggered reporting of UTRA TDD neighbours in fading propagation conditions (cell1)

Parameter	Unit	Cell 1		
		T1	T2	
E-UTRA RF Channel		1		
Number				
BW _{channel}	MHz	10		
Correlation Matrix and		1x2 l	_OW	
Antenna Configuration				
OCNG Patterns defined		OP.1	FDD	
in A.3.2.1.1 (OP.1 FDD)				
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	0		
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
N_{oc}	dBm/15KH	-9	8	
1 voc	Z			
RSRP	dBm	-94	-94	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	
P-SCH_RP	dBm	-9	4	
S-SCH_RP	dBm	-9	4	
Propagation Condition		ETU70		
Note 1: OCNG shall be used such that cell 1 is fully allocated and a				

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Table A.8.9.1.1-3: Cell specific test parameters for Event triggered reporting of UTRA TDD neighbours in fading propagation conditions (cell2)

Parameter	Unit	Cell 2				
		T1			T2	
Timeslot Number		0	DwPTS	0	DwPTS	
UTRA RF Channel			Cha	annel1		
Number (NOTE1)						
PCCPCH_Ec/lor	dB	-In	finity	-3		
DwPCH_Ec/lor	dB	-In	finity		0	
OCNS_Ec/lor		-Infinity		-3		
\hat{I}_{or}/I_{oc}	dB	-Infinity		9		
I_{oc}	dBm/1.28 MHz	-70				
PCCPCH_RSCP Note 3	dB	-Infinity		-64		
lo Note 3	dBm/1.28 MHz	-70.00		-60.49		
Propagation		Case 3 (NOTE2)				
Condition		,				
NOTE1: The DDCH of the cell is located in a timeslat other than 0						

NOTE1: The DPCH of the cell is located in a timeslot other than 0.

NOTE2: Case 3 propagation conditions are specified in TS25.102 Annex B

NOTE3: PCCPCH_RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves

A.8.9.1.2 Test Requirements

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 12800 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2 x TTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.9.2 E-UTRAN FDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

A.8.9.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct enhanced reporting of UTRAN cells. This test will partly verify the enhanced UTRA TDD cell identification requirements in clause 8.1.2.4.4 under AWGN propagation conditions.

This test scenario comprised of 1 E-UTRA FDD serving cell, and 1 UTRA TDD cell to be searched. Test parameters are given in Table A.8.9.2.1-1, A.8.9.2.1-2, and A.8.9.2.1-3. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time period T1, gaps are activated and an interRAT measurement reporting configuration is configured, and linked to a UTRA measurement object corresponding to channel UARFCN 1. Prior to time duration T2, the UE shall not have any timing information of cell 2. Cell 2 is powered up at the beginning of the T2.

Table A.8.9.2.1-1: General test parameters for E-UTRAN FDD- UTRAN TDD enhanced cell search in AWGN propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1.
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
UTRA RF Channel Number		1	One UTRA TDD carrier frequency is used.
Inter-RAT (UTRA TDD)		P-CCPCH RSCP	
measurement quantity			
Thresh	dBm	-83	Absolute P-CCPCH RSCP threshold for event B1
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA TDD cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell list
Time offset between cells	ms	3	
T1	S	5	
T2	S	2	

Table A.8.9.2.1-2: Cell specific test parameters for cell #1 E-UTRAN FDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

Parameter	Unit	Се	II 1	
		T1	T2	
E-UTRA RF Channel Number		1		
BW _{channel}	MHz	1	0	
OCNG Patterns defined in		OP.1	EDD	
A.3.2.1.1 (OP.1 FDD)		OF.1	רטט	
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	0		
PDCCH_RA	dB			
PDCCH_RB	dB	<u></u>		
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	
$N_{oc}^{$	dBm/15 kHz	-98		
\hat{E}_s/N_{oc}	dB	4	4	
RSRP Note 4	dBm/15 kHz	-94	-94	
SCH_RP	dBm/15 kHz	-94	-94	
Propagation Condition		AW	GN	
Note 1: OCNG shall be used	such that both c	ells are fully allocated	and a constant	
total transmitted pow	er spectral densi	tv is achieved for all C	OFDM symbols.	

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.9.2.1-3: Cell specific test parameters for cell #2 E-UTRAN FDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

Parameter	Unit		Cell 2 (U	TRA TDD)	
Timeslot Number			0	Dw	PTS
		T1	T2	T1	T2
UTRA RF Channel Number Note1			Char	nel 1	
P-CCPCH_Ec/lor	dB	-4.77	-4.77		
DwPCH_Ec/lor	dB			0	0
OCNS_Ec/lor ^{Note2}	dB	-1.76	-1.76		
\hat{I}_{or}/I_{oc}	dB	-inf	8	-inf	8
I_{oc}	dBm/1.28 MHz		-}	30	
P-CCPCH RSCP Note3	dBm	-inf	-76.77	n.a.	n.a.
P-CCPCH_Ec/Io Note3	dB	-inf	-5.41	n.a.	n.a.
DwPCH_Ec/Io Note3	dB	n.a.	n.a.	-inf	-0.64
Propagation Condition		AWGN			

Note 1: In the case of multi-frequency cell, the UTRA RF Channel Number is the primary frequency's channel number.

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}. Note 3: P-CCPCH RSRP, PCCPCH_Ec/lo and DwPCH_Ec/lo levels have been derived from other parameters for

information purposes. They are not settable parameters themselves.

A.8.9.2.2 Test Requirements

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 1120 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.10 E-UTRAN TDD – GSM Measurements

A.8.10.1 E-UTRAN TDD – GSM event triggered reporting in AWGN

A.8.10.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter-RAT (GSM) measurements. This test will partly verify the E-UTRAN TDD - GSM cell search requirements in clause 8.1.2.4.6.

The test parameters are given in Tables A.8.10.1.1-1, A.8.8.1.1-2 and A.8.10.1.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.10.1.1-1: General test parameters for E-UTRAN TDD-GSM event triggered reporting in AWGN

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2.
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2.
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on Absolute RF Channel Number 1 (GSM cell)
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
Inter-RAT (GSM) measurement quantity		GSM Carrier RSSI	
b1-Threshold-GERAN	dBm	-80	GSM Carrier RSSI threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored GSM cell list size		6 GSM neighbours including ARFCN 1	List of GSM cells provided before T2 starts.
T1	S	5	
T2	S	5	

Table A.8.10.1.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for event triggered reporting of GSM cell in AWGN

Parameter	Unit	Cell 1			
		T1	T2		
E-UTRA RF Channel Number		1	l		
BW _{channel}	MHz	1	0		
OCNG Pattern defined in					
A.3.2.2.1 (OP.1 TDD)		OP.1	TDD		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB	0			
PHICH_RB	dB				
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	4	4		
$N_{oc}^{$	dBm/15 kHz	-98			
\hat{E}_s/N_{oc}	dB	4	4		
RSRP Note 4	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94	-94		
Propagation Condition		AWGN	•		
	hieved for all OF		·		

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be

Note 4: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.10.1.1-3: Cell specific test parameters for GSM (cell # 2) for event triggered reporting of GSM cell in AWGN

Parameter	Unit	Cell 2		
		T1	T2	
Absolute RF Channel Number		ARFNC 1		
RXLEV	dBm	-Infinity	-75	
GSM BSIC		N/A	Valid	
Propagation Condition		AWGN		

A.8.10.1.2 Test Requirements

The UE shall send one Event B1 triggered measurement report including the valid BSIC of cell # 2, with a measurement reporting delay less than 3120 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE 1: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

NOTE 2: The delay for GSM cell identification with BSIC verified is equal to 3120 ms, which is the sum of the event triggered measurement reporting delay and the initial BSIC identification delay.

The event triggered measurement reporting delay = $2*T_{Measurement\ Period,\ GSM}$ = 2*480ms = 960ms.

Initial BSIC identification delay = 2160 ms.

A.8.10.2 E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

A.8.10.2.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These tests will partly verify the E-UTRAN TDD-GSM cell search requirements when DRX is used in clause 8.1.2.4.6.

In these tests, there are two cells, one E-UTRAN cell and one GSM cell, and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

The common test parameters are given in Table A.8.10.2.1-1. Cell specific test parameters are given in Table A.8.10.2.1-2 for E-UTRAN and in Table A.8.10.2.1-5 for GSM. DRX configuration for Test1 and Test2 are given in Table A.8.10.2.1-3 and time alignment timer and scheduling request related parameters in Table A.8.10.2.1-4.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B1 is used. The tests consist of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.10.2.1-1: General test parameters for E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

Parameter	Unit	Test 1	Test 2	Comment		
		Value				
PDSCH parameters (E-		DL Reference Measurement		As specified in clause A.3.1.1.2. Note that		
UTRAN TDD)		Channel R.0 TDD)	UE may only be allocated at On Duration		
PCFICH/PDCCH/PHICH		DL Reference Me	easurement	As specified in clause A.3.1.2.2.		
parameters (E-UTRAN TDD)		Channel R.6 TDE)			
Gap Pattern Id		0		As specified in TS 36.133 clause 8.1.2.1.		
Active cell		Cell 1		Cell 1 is on E-UTRA RF channel number 1.		
Neighbour cell		Cell 2		Cell 2 is on Absolute RF Channel Number 1 (GSM cell)		
Special subframe configuration		6		As specified in table 4.2-1 in TS 36.211.		
Uplink-downlink configuration		1		1		As specified in TS 36.211 clause 4.2 Table 4.2-2
CP length		Normal		Applicable to cell 1		
E-UTRA RF Channel		,	1	One E-UTRA TDD carrier frequency is		
Number				used.		
E-UTRA Channel Bandwidth (BW _{channel})	MHz	1	0			
Inter-RAT (GSM) measurement quantity		GSM Car	rier RSSI			
B1-Threshold-GERAN	dBm	-80		GSM Carrier RSSI threshold for event B1.		
Hysteresis	dB	0				
TimeToTrigger	S	0				
Filter coefficient		0		L3 filtering is not used		
PRACH configuration		4		As specified in table 5.7.1-2 in TS 36.211		
Access Barring Information	-	Not Sent		No additional delays in random access procedure.		
DRX		ON		DRX related parameters are defined in Table A.8.10.2.1-3		
Monitored GSM cell list size		6 GSM neighbours including ARFCN 1		List of GSM cells provided before T2 starts.		
T1	S	5				
T2	S	5	45			

Table A.8.10.2.1-2: Cell specific test parameters for E-UTRAN TDD (cell #1) event triggered reporting of GSM cell when DRX is used in AWGN

Parameter	Unit	Cell 1			
		T1	T2		
E-UTRA RF Channel Number		1			
BW _{channel}	MHz		10		
OCNG Patterns defined in					
A.3.2.2.1 (OP.1 TDD)		OP.	1 TDD		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB	0			
PHICH_RB	dB				
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB	1			
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4		
$N_{oc}^{ m Note~2}$	dBm/15 kHz	-98			
RSRP Note 3	dBm/15 kHz	-94	-94		
SCH_RP	dBm/15 kHz	-94	-94		
\hat{E}_s/N_{oc}	dB	4	4		
Propagation Condition		AWGN	•		

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.10.2.1-3: drx-Configuration to be used in E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

Field	Test1	Test2	Comment		
rieiu	Value	Value			
onDurationTimer	psf1	psf1			
drx-InactivityTimer	psf1	psf1			
drx-RetransmissionTimer	psf1	psf1			
longDRX-CycleStartOffset	sf40	sf1280			
shortDRX	Disable	Disable			
Note: For further information see clause 6.3.2 in TS 36.331.					

Table A.8.10.2.1-4: *TimeAlignmentTimer* and *sr-ConfigIndex* -Configuration to be used in E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

Field	Test1	Test2	Comment
Field	Value	Value	
TimeAlignmentTimer	sf500	sf500	For further information see
TimeAlignmentTime	31300	31300	clause 6.3.2 in TS 36.331.
			For further information see
sr-ConfigIndex	sr-ConfigIndex 2	2	clause 6.3.2 in TS 36.331 and
			clause 10.1 in TS 36.213.

Table A.8.10.2.1-5: Cell specific test parameters for GSM (cell # 2) for event triggered reporting of GSM cell when DRX is used in AWGN

Parameter	Unit	Cell 2	
		T1	T2
Absolute RF Channel Number		AF	RFNC 1
RXLEV	dBm	-Infinity	-75
GSM BSIC		N/A	Valid

A.8.10.2.2 Test Requirements

In Test1 the UE shall send one Event B1 triggered measurement report including BSIC of cell #2, with a measurement reporting delay less than 3120 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE send the measurement report on PUSCH.

In Test2 the UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 42.8 seconds from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event B1 measurement report

A.8.11 Monitoring of Multiple Layers

A.8.11.1 Multiple E-UTRAN FDD-FDD Inter-frequency event triggered reporting under fading propagation conditions

A.8.11.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of multiple events. This test will partly verify the FDD-FDD inter-frequency cell search requirements in clause 8.1.2.3.

The test parameters are given in Tables A.8.11.1.1.1-1 and A.8.11.1.1.1-2. In this test, there are three cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2 or cell 3.

Table A. 8.11.1.1-1: General test parameters for Inter-frequency E-UTRA FDD – E-UTRA FDD and E-UTRA FDD cell search under fading

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.1
parameters		Channel R.6 FDD	
E-UTRA RF Channel		1, 2, 3	Three FDD carrier frequencies are used.
Number			
Channel Bandwidth	MHz	10	
(BW _{channel})			
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2 and cell 3	Cell 2 is on RF channel number 2 and cell
			3 is on RF channel number 3
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	s	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Time offset between E-		3 ms	Asynchronous cells
UTRAN FDD cells			•
T1	S	5	
T2	S	10	

Table A.8.11.1.1-2: Cell specific test parameters for Inter-frequency E-UTRA FDD – E-UTRA FDD and E-UTRA FDD cell search under fading

Parameter	Unit	C	ell 1	Cell	2	Cell 3	
		T1	T2	T1	T2	T1	T2
E-UTRA RF Channel			1	2		3	
Number							
BW _{channel}	MHz		10	10)	10	
Correlation Matrix and		1	1x2	1x2 L	_ow	1x2 Low	
Antenna							
Configuration							
OCNG Patterns							
defined in A.3.2.1.1		OP.	1 FDD	OP.2	FDD	OP.2 FDD	
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB					0	
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		0	0			
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$N_{oc}^{ m Note 3}$	dBm/15				-98		
	kHz						
RSRP Note 4	dBm/15	-98	-98	-Infinity	-95	-Infinity	-95
	kHz						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	0	0	-Infinity	3	-Infinity	3
SCH_RP Note 4	dBm/15	-98	-98	-Infinity	-95	-Infinity	-95
	kHz						
\hat{E}_s/N_{oc}	dB	0	0	-Infinity	3	-Infinity	3
Propagation Condition			VGN	ETU		ETU70	
	be used suc				ed and a co	nstant total transm	itted

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.11.1.2 Test Requirements

The UE shall send Event A3 triggered measurement reports for both cell 2 and cell 3, with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.11.2 E-UTRAN TDD – E-UTRAN TDD and E-UTRAN TDD Inter-frequency event triggered reporting under fading propagation conditions

A.8.11.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of two events. This test will partly verify the TDD-TDD inter-frequency cell search requirements in clause 8.1.2.3.

The test parameters are given in Tables A.8.11.2.1-1 and A.8.11.2.1-2. In this test, there are three cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2 and cell 3.

Table A.8.11.2.1-1: General test parameters for E-UTRAN TDD - E-UTRAN TDD and E-UTRAN TDD Interfrequency event triggered reporting under fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in TS 36.211 clause 4.2 Table 4.2-2
E-UTRA RF Channel Number		1, 2, 3	Three TDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbor cells		Cell 2 and Cell 3	Cell 2 and 3 are on RF channel numbers 2 and 3 respectively
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Time offset between cells		3 μs	Synchronous cells
T1	S	5	
T2	S	10	

Table A.8.11.2.1-2: Cell specific test parameters for E-UTRAN TDD - E-UTRAN TDD and E-UTRAN TDD Interfrequency event triggered reporting under fading propagation conditions cells

Parameter	Unit	Ce	ell 1	Cell 2		Cell 3	
Parameter	Unit	T1	T2	T1	T2	T1	T2
E-UTRA RF Channel Number			1	2		3	
BW _{channel}	MHz	,	10	10)	10)
Correlation Matrix and		1	x2	1x2 L	-OW	1x2 L	_OW
OCNG Patterns defined in A.3.2.2.1 (OP.1 TDD) and in A.3.2.2.2 (OP.2 TDD)		OP.1 TDD		OP.2 TDD		OP.2 TDD	
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB			0		0	
PHICH_RB	dB		0				
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$N_{oc}^{ m Note 3}$	dBm/15 kHz	-98					
RSRP Note 4	dBm/15 kHz	-98	-98	-inf	-95	-inf	-95
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	0	0	-inf	3	-inf	3
SCH_RP Note 4	dBm/15 kHz	-98	-98	-inf	-95	-inf	-95
\hat{E}_s/N_{oc}	dB	0	0	-inf	3	-inf	3
Propagation Condition		AV	/GN	ETU	70	ETU70	

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.11.2.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for cell 2 with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall send one Event A3 triggered measurement report for cell 3 with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE 1: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.11.3 E-UTRAN FDD-FDD Inter-frequency and UTRAN FDD event triggered reporting under fading propagation conditions

A.8.11.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event when doing inter frequency and UTRAN FDD measurements. This test will partly verify the FDD-FDD inter-frequency cell search requirements in clause 8.1.2.3 and the E-UTRAN FDD- UTRAN FDD cell search requirements in clause 8.1.2.4.1.

The test parameters are given in Tables A.8.11.3.1-1, A.8.11.3.1-2 and A.8.11.3.1-3. In this test, there are two cells on different carrier frequencies and one cell on UTRAN carrier frequency and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 and B2 is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2 and cell 3.

Table A.8.11.3.1-1: General test parameters for Combined inter-frequency and UTRAN event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1.
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cells		Cell 2, 3	Cell 2 is on E-UTRA RF channel number 2. Cell 3 is on UTRA RF channel number 1.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1, 2	Two FDD carrier frequencies are used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
E-UTRAN FDD measurement		RSRP	
quantity			
Inter-RAT (UTRA FDD)		CPICH Ec/N0	
measurement quantity			
A3-Offset	dB	-6	
b2-Threshold-E-UTRA	dB	-86	RSRP threshold for event B2.
b2-Threshold-UTRA	dB	-18	CPICH Ec/N0 threshold for event B2.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA FDD cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell list.
Time offset between cells		3 ms	Asynchronous cells
T1	S	5	
T2	S	8	

Table A.8.11.3.1-2: Cell specific test parameters for Combined inter-frequency and UTRAN event triggered reporting in fading propagation conditions

	Unit	Le	II 1	Cell 2		
		T1	T2	T1 T2		
E-UTRA RF Channel		,			2	
Number						
BW _{channel}	MHz	1	0	1	0	
Correlation Matrix and		1:	(2	1x2	Low	
Antenna Configuration						
OCNG Patterns						
defined in A.3.2.1.1		OP.1	FDD	OP.2	: FDD	
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB			0		
PHICH_RB	dB	()			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{oc}^{ m Note~3}$	dBm/15 kHz	-98				
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
\hat{E}_{s}/I_{ot}	dB	4	4	-Infinity	7	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7	
Propagation Condition AWGN ETU70					Ú70	

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant

over subcarriers and time and shall be modelled as AWGN of appropriate power for $^{N_{oc}}$ to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.11.3.1-3: Cell specific test parameters for UTRAN FDD (cell # 3) for event triggered reporting of UTRAN FDD cell under fading propagation conditions

Parameter	Unit	Cell 3	3			
		T1	T2			
UTRA RF Channel Number		1				
CPICH_Ec/lor	dB	-10				
PCCPCH_Ec/lor	dB	-12				
SCH_Ec/lor	dB	-12				
PICH_Ec/lor	dB	-15				
DPCH_Ec/lor	dB	N/A				
OCNS		-0.94	1			
\hat{I}_{or}/I_{oc}	dB	-Infinity	-1.8			
I_{oc}	dBm/3.84 MHz	-70				
CPICH_Ec/lo	dB	-Infinity	-14			
Propagation Condition		Case 5 (Note 3)				

Note 1: The DPCH level is controlled by the power control loop.

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal

to l_{or}.

Note 3: Case 5 propagation conditions are defined in Annex A of TS 25.101.

A.8.11.3.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than 4800 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.11.4 InterRAT E-UTRA TDD to E-UTRA TDD and UTRA TDD cell search test case

A.8.11.4.1 Test Purpose and Environment

This test is to verify that the UE makes correct reporting of an event when doing inter frequency measurements and UTRA TDD measurements. The test will partly verify the requirements in clause 8.1.2.3.2 combined 8.1.2.4.3 under fading propagation conditions.

This test scenario comprised of 2 E-UTRA TDD cells operating on different frequency, and 1 UTRA TDD cell. Test parameters are given in table A.8.11.4.1-1, A.8.11.4.1-2, and A.8.11.4.1-3. Gap pattern configuration #0 as defined in clause 8.1.2.1 is provided.

The test consists of 2 successive time periods, with time duration T1 and T2. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 and B2 shall be used.

Table A.8.11.4.1-1: General test parameters for combined E-UTRA TDD inter-frequency and UTRA TDD cells search under fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference	As specified in clause A.3.1.1.2
		Measurement	
		Channel R.0 TDD	
PCFICH/PDCCH/PHICH		DL Reference	As specified in clause A.3.1.2.2
parameters		Measurement	
		Channel R.6 TDD	
Active cell		Cell 1	E-UTRA TDD cell is on RF channel number 1
Neighbour cell		Cell 2	E-UTRA TDD cell is on RF channel number 2
		Cell 3	1.28Mcps TDD cell
CP length of cell1 and cell2		Normal	
Uplink-downlink configuration		1	As specified in Table 4.2-2 in TS 36.211. The
of cell1 and cell2			same configuration in both cells
Special subframe		6	As specified in table 4.2-1 in TS 36.211. The
configuration of cell1 and			same configuration in both cells
cell2			
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
E-UTRAN TDD		RSRP	
measurement quantity			
UTRAN TDD measurement		RSCP	
quantity			
DRX		OFF	
Ofn	dB	0	Parameter for A3 and B2 event
Ocn	dB	0	Parameter for A3 event
Hysteresis	dB	0	Parameter for A3 and B2 event
Ofs	dB	0	Parameter for A3 event
Ocs	dB	0	Parameter for A3 event
A3-Offset	dB	-6	Parameter for A3 event
Thresh1	dBm	-86	Absolute E-UTRAN RSRP threshold for event
			B2
Thresh2	dBm	-84	Absolute UTRAN RSCP threshold for event B2
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
Time offset between E-	μs	3	Synchronous cells
UTRAN TDD cells	·		
T1	S	>5	During T1, cell 2 and cell 3 shall be powered off.
			During the off time the physical layer cell identity
			of cell 2 shall be changed, and the primary
			scrambling code of cell 3 shall be changed.
T2	S	15	

Table A.8.11.4.1-2: Cell specific test parameters for combined E-UTRAN TDD inter-frequency and UTRA TDD cell search under fading propagation conditions(cell1 and cell2)

Parameter	Unit	Ce	ll 1	Ce	Cell 2		
		T1	T2	T1	T2		
E-UTRA RF Channel			1	2			
Number							
BWchannel	MHz	1	0	1	0		
Correlation Matrix and		1:	x2	1x2	Low		
Antenna Configuration							
OCNG Pattern defined							
in A.3.2.2.1 (OP.1		OP.1	TDD	OP.2	TDD		
TDD) and in A.3.2.2.2							
(OP.2)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		•				
PHICH_RB	dB	(0	0			
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RANote 1	dB						
OCNG_RBNote 1	dB						
\hat{E}_s/I_{ot}	dB	4	4	-Infinity	7		
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7		
N_{oc}	dBm/15 kHz	-98					
RSRP	dBm/15 kHz	-94	-94	-Infinity	-91		
SCH_RP	dBm/15 kHz	-94	-94	-infinity	-91		
Propagation Condition		AW	/GN	ET	J70		

Note 2: The resources for uplink transmission are assigned to the UE priori to the start of time period T2.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.11.4.1-3: Cell specific test parameters for combined E-UTRA TDD inter-frequency and UTRA TDD cell search under fading propagation conditions(cell3)

Parameter	Unit	Cell 3 (UTRA)				
Timeslot Number		0		DwPTS		
		T1	T2	T1	T2	
UTRA RF Channel			Char	nel 3		
Number*						
PCCPCH_Ec/lor	dB	-3				
DwPCH_Ec/lor	dB			0		
OCNS_Ec/lor	dB	-3	3			
\hat{I}_{or}/I_{oc}	dB	-Infinity	9	-Infinity	9	
I_{oc}	dBm/1.28 MHz	-80				
PCCPCH RSCP	dBm	-Infinity -74		n.a	a.	
Propagation Condition		Case 3				
Note1: The DDCH of all colleges located in a timeclet other than 0						

Note1: The DPCH of all cells are located in a timeslot other than 0.

Note2: In the case of multi-frequency network, the UTRA RF Channel Number

can be set for the primary frequency in this test.

Note3: P-CCPCH RSCP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.11.4.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 7680ms from the beginning of time period T2.

The UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than 12.8s from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.11.5 Combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

A.8.11.5.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of multiple events when doing inter frequency and GSM measurements. This test will partly verify the E-UTRAN FDD-FDD inter-frequency cell search requirements in clause 8.1.2.3.1 and simultaneously the E-UTRAN FDD- GSM cell search requirements in clause 8.1.2.4.5.

The test parameters are given in Tables A.8.11.5.1-1, A.8.11.5.1-2 and A.8.11.5.1-3. In this test, there are two cells on different carrier frequencies and one GSM cell. Gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 and B2 is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2 and cell 3.

Table A.8.11.5.1-1: General test parameters for combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-		DL Reference Measurement	As specified in clause A.3.1.1.1.
UTRAN FDD)		Channel R.0 FDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.1.
parameters		Channel R.6 FDD	
(E-UTRAN FDD)			
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cells		Cell 2, 3	Cell 2 is on E-UTRA RF channel number 2.
			Cell 3 is on Absolute RF Channel Number 3
			(GSM cell).
CP length		Normal	Applicable to cell 1 and cell 2
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
E-UTRAN FDD measurement		RSRP	
quantity			
Hysteresis	dB	0	Parameter for A3 and B2 event
A3-Offset	dB	-6	
TimeToTrigger	s	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Time offset between E- UTRAN FDD cells	ms	3 ms	Asynchronous cells
Inter-RAT (GSM)		GSM Carrier RSSI	
measurement quantity			
b2-Threshold-E-UTRA	dBm	-83	RSRP threshold for event B2. This is the threshold for E-UTRA in the B2 configuration. E-UTRA PCell RSRP is below this throughout the test to account for measurement accuracy and fading
b2-Threshold-GERAN	dBm	-80	GSM Carrier RSSI threshold for event B2.
Monitored GSM cell list size		6 GSM neighbours including ARFCN 3	List of GSM cells provided before T2 starts.
T1	s	5	
T2	s	10	

Table A.8.11.5.1-2: Cell specific test parameters for E-UTRAN FDD cells for combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Parameter	Unit	Се	II 1	Се	II 2	
		T1	T2	T1	T2	
E-UTRA RF Channel			1	2		
Number						
BW _{channel}	MHz	1	0	1	0	
Correlation Matrix and		1x2	Low	1x2	Low	
Antenna Configuration						
OCNG Patterns						
defined in A.3.2.1.1		OP.1	FDD	OP.2	? FDD	
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB			0		
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB		_			
PHICH_RB	dB	(0			
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{oc}^{$	dBm/15 kHz	-98				
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	-Infinity	7	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7	
Propagation Condition		ET	Ú70	ET	U70	
the first of the control of the cont						

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.11.5.1-3: Cell specific test parameters for GSM (cell # 3) for combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Parameter	Unit	Cell 3		
		T1	T2	
Absolute RF Channel Number		ARFCN3		
RXLEV	dBm	-Infinity	-75	
GSM BSIC		N/A	Valid	

A.8.11.5.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for cell 2, with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall send one Event B2 triggered measurement report including BSIC of cell 3, with a measurement reporting delay less than 7200 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.
- NOTE 2: The delay for GSM cell identification with BSIC verified is equal to 7200 ms, which is the sum of the event triggered measurement reporting delay and the initial BSIC identification delay.

The event triggered measurement reporting delay = $2*T_{Measurement\ Period,\ GSM} = 2*N_{freq}*480ms = 1920ms$.

Initial BSIC identification delay = 5280 ms, when one carrier frequency other than GSM is monitored in the gaps.

A.8.11.6 Combined E-UTRAN TDD – E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

A.8.11.6.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of multiple events when doing inter frequency and GSM measurements. This test will partly verify the E-UTRAN TDD-TDD inter-frequency cell search requirements in clause 8.1.2.3.2 and simultaneously the E-UTRAN TDD- GSM cell search requirements in clause 8.1.2.4.6.

The test parameters are given in Tables A.8.11.6.1-1, A.8.11.6.1-2 and A.8.11.6.1-3. In this test, there are two cells on different carrier frequencies and one GSM cell. Gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 and B2 is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2 and cell 3.

Table A.8.11.6.1-1: General test parameters for combined E-UTRAN TDD – E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-		DL Reference Measurement	As specified in clause A.3.1.1.2.
UTRAN TDD)		Channel R.0 TDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.2.
parameters		Channel R.6 TDD	
(E-UTRAN TDD)			
Special subframe		6	As specified in table 4.2-1 in TS 36.211. The
configuration of cell1 and			same configuration in both cells
cell2			
Uplink-downlink configuration		1	As specified in TS 36.211 clause 4.2 Table 4.2-2
of cell1 and cell2			
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cells		Cell 2, 3	Cell 2 is on E-UTRA RF channel number 2.
			Cell 3 is on Absolute RF Channel Number 3
			(GSM cell).
CP length		Normal	Applicable to cell 1 and cell 2
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
E-UTRAN TDD measurement		RSRP	
quantity			
Hysteresis	dB	0	Parameter for A3 and B2 event
A3-Offset	dB	-6	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Time offset between E-	μs	3	Synchronous cells
UTRAN TDD cells			
Inter-RAT (GSM)		GSM Carrier RSSI	
measurement quantity			
b2-Threshold-E-UTRA	dBm	-83	RSRP threshold for event B2. This is the
			threshold for E-UTRA in the B2 configuration. E-
			UTRA PCell RSRP is below this throughout the
			test to account for measurement accuracy and
			fading
b2-Threshold-GERAN	dBm	-80	GSM Carrier RSSI threshold for event B2.
Monitored GSM cell list size		6 GSM neighbours including ARFCN 3	List of GSM cells provided before T2 starts.
T1	S	5	
T2	S	10	

Table A.8.11.6.1-2: Cell specific test parameters for E-UTRAN TDD cells for combined E-UTRAN TDD – E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

	Unit	Ce	ll 1	Cel	12	
		T1	T2	T1	T2	
E-UTRA RF Channel		1		2		
Number						
BW _{channel}	MHz	1	0	10)	
Correlation Matrix and		1x2	Low	1x2	_ow	
Antenna Configuration						
OCNG Patterns						
defined in A.3.2.2.1		OP.1	TDD	OP.2	TDD	
(OP.1 TDD) and in						
A.3.2.2.2 (OP.2 TDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB		_			
PHICH_RB	dB		0	0		
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{oc}^{ m Note 3}$	dBm/15 kHz			-98		
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	-Infinity	7	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7	
Propagation Condition		ETU70 ETU70				

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.11.6.1-3: Cell specific test parameters for GSM (cell # 3) for combined E-UTRAN TDD – E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Parameter	Unit	(Cell 3	
		T1	T2	
Absolute RF Channel Number		ARFCN3		
RXLEV	dBm	-Infinity	-75	
GSM BSIC		N/A	Valid	

A.8.11.6.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for cell 2, with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall send one Event B2 triggered measurement report including BSIC of cell 3, with a measurement reporting delay less than 7200 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.
- NOTE 2: The delay for GSM cell identification with BSIC verified is equal to 7200 ms, which is the sum of the event triggered measurement reporting delay and the initial BSIC identification delay.

The event triggered measurement reporting delay = $2*T_{Measurement\ Period,\ GSM} = 2*N_{freq}*480ms = 1920ms$.

Initial BSIC identification delay = 5280 ms, when one carrier frequency other than GSM is monitored in the gaps.

A.8.12 RSTD Intra-frequency Measurements

A.8.12.1 E-UTRAN FDD intra-frequency RSTD measurement reporting delay test case

A.8.12.1.1 Test Purpose and Environment

The purpose of the test is to verify that the RSTD measurement meets the requirements specified in Clause 8.1.2.5.1 in an environment with fading propagation conditions.

In the test there are three synchronous cells: Cell 1, Cell 2 and Cell 3. Cell 1 is the reference as well as the PCell. Cell 2 and Cell 3 are the neighbour cells. All cells are on the same RF channel.

The test consists of three consecutive time intervals, with duration of T1, T2 and T3. Cell 1 is active in T1, T2 and T3, whilst Cell 2 and Cell 3 are activated only in the beginning of T2. Cell 2 is active until the end of T3, and Cell 3 is active until the end of T2. The beginning of the time interval T2 shall be aligned with the first PRS positioning subframe of a positioning occasion in the reference cell, where the PRS positioning occasion is as defined in Clause 8.1.2.5.1. Cell 1 transmits PRS in T2, while Cell 2 transmits PRS only in T3, and Cell 3 transmits PRS only in T2. Note: The information on when PRS is muted is conveyed to the UE using PRS muting information.

The OTDOA assistance data as defined in TS 36.355, Clause 6.5.1, shall be provided to the UE during T1. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of T2, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data.

The test parameters are as given in Table A.8.12.1.1-1, Table A.8.12.1.1-2, Table A.8.12.1.1-3 and Table A.8.12.1.1-4.

Table A.8.12.1.1-1: General test parameters for E-UTRAN FDD intra-frequency RSTD measurement reporting delay under fading propagation conditions

Parameter	Unit	Value	Comment
Reference cell		Cell 1	Reference cell is the cell in the OTDOA assistance data with respect to which the RSTD measurement is defined, as specified in TS 36.214 [4] and TS 36.355 [24]. The reference cell is the PCell in this test case.
Neighbor cells		Cell 2 and Cell 3	Cell 2 and Cell 3 appear at random places in the neighbour cell list in the OTDOA assistance data, but Cell 2 always appears in the first half of the list, whilst Cell 3 appears in the second half of the list.
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Channel Bandwidth (BW _{channel})	MHz	10	
PRS Transmission Bandwidth	RB	50	PRS are transmitted over the system bandwidth
PRS configuration index I_{PRS}		171	This corresponds to periodicity of 320 ms and PRS subframe offset of $I_{\rm PRS}$ –160 DL subframes, as defined in TS 36.211 [16], Table 6.10.4.3-1
Number of consecutive downlink positioning subframes N_{PRS}		1	As defined in TS 36.211 [16]. The number of subframes in a positioning occasion
Physical cell ID PCI		(PCI of Cell 1 – PCI of Cell 2)mod6=0 and (PCI of Cell 1 – PCI of Cell 3)mod6=0	The cell PCIs are selected such that the relative shifts of PRS patterns among cells are as given by the test parameters
CP length		Normal	DRX parameters are further
DRX		ON	specified in Table A.8.12.1.1-3
Radio frame receive time offset between the cells at the UE antenna connector	μs	Cell 2 to Cell 1: 1 Cell 3 to Cell 1: -1	PRS are transmitted from synchronous cells
Expected RSTD	μs	Cell 2: 3 Cell 3: 3 Other neighbour cells: randomly between -3 and 3	The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator
Expected RSTD uncertainty for all neighbour cells	μs	5	The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD-Uncertainty index
Number of cells provided in OTDOA assistance data		16	Including the reference cell
PRS muting info		Cell 1: '11110000' Cell 2: '00001111' Cell 3: '11110000'	Correponds to prs-MutingInfo defined in TS 36.355 [24]
T1	s	3	The length of the time interval from the beginning of each test
T2	S	1.28	The length of the time interval that follows immediately after time interval T1
Т3	S	1.28	The length of the time interval that follows immediately after time interval T2

Table A.8.12.1.1-2: Cell-specific test parameters for E-UTRAN FDD intra-frequency RSTD measurement reporting delay under fading propagation conditions during T1

Unit	Cell 1	Cell 2	Cell 3		
	1	1	1		
	1x2 Low	1x2 Low	1x2 Low		
	OP.5 FDD	N/A	N/A		
]					
]					
]					
dB	0	N/A	N/A		
1					
]					
]					
1					
dBm/ 15 kHz		-95			
dB	-Infinity	-Infinity	-Infinity		
dBm/ 9 MHz	-67.22	N/A	N/A		
dB	0	-Infinity	-Infinity		
	ETU30				
	dBm/ 15 kHz dB dBm/ 9 MHz	dBm/ 15 kHz dB -Infinity dBm/ 9 MHz -67.22	1x2 Low		

- Note 1: OCNG shall be used such that active cell (Cell 1) is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.
- Note 3: Interference from other cells and noise sources not specified in the test are assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
- Note 4: lo levels have been derived from other parameters and are given for information purpose. These are not settable test parameters.

Table A.8.12.1.1-3: Cell-specific test parameters for E-UTRAN FDD intra-frequency RSTD measurement reporting delay under fading propagation conditions during T2 and T3

Parameter	Unit	C	ell 1	Cell 2		Cell 3	
		T2	T3	T2	Т3	T2	T3
E-UTRA RF Channel			1	1			1
Number							•
Correlation Matrix and		1x2	2 Low	1x2	Low	1x2	Low
Antenna Configuration							,
OCNG patterns		OP.	5 FDD	OP.6	FDD	OP.6	N/A
defined in A.3.2.1				0.10		FDD	
PBCH_RA							
PBCH_RB							
PSS_RA							
SSS_RA							
PCFICH_RB			_	_		_	
PHICH_RA	dB		0	C	1	0	N/A
PHICH_RB							
PDCCH_RA							
PDCCH_RB							
OCNG_RA ^{Note 1}							
OCNG_RB ^{Note 1}	i.		L 51/6	.	1 .		
PRS_RA	dB	-3	N/A	N/A	3	3	N/A
N_{oc} Note 3	dBm/ 15 kHz	-98	-95	-98	-95	-98	-95
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}$	dB	-1	-Infinity	-Infinity	-7	-7	-Infinity
PRS $\hat{E}_{_{s}}/I_{_{ot}}^{}$ Note 4	dB	-1.79	-Infinity	-Infinity	-7	-9.54	-Infinity
lo Note 4	dBm/ 9 MHz	-69.55	-67.08	-69.55	-67.08	-69.55	N/A
PRP Note 4	dBm/ 15 kHz	-99	-Infinity	-Infinity	-102	-105	-Infinity
RSRP Note 4	dBm/ 15 kHz	-96	-93	-105	-105	-108	-Infinity
$\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}^{\mathrm{Note 4}}$	dB	2	2	-7	-10	-10	-Infinity
Propagation Condition		ETU30					

Note 1: OCNG shall be used such that active cells (all, except Cell 3 in T3) are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols other than those in the subframes with transmitted PRS.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period

Note 3: Interference from other cells and noise sources not specified in the test are assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 4: If PRS_RA is not "N/A", \hat{E}_s/N_{oc} , PRS \hat{E}_s/I_{ot} , Io, RSRP and PRP levels have been derived from other parameters and are given for information purpose. If PRS_RA is "N/A", Io and RSRP levels have been derived from other parameters and are given for information purpose. These are not settable test parameters. Interference conditions shall be applied to all PRS symbols of DL positioning subframes.

Table A.8.12.1.1-4: DRX parameters for the test of E-UTRAN FDD intra-frequency RSTD measurement reporting delay under fading propagation conditions

Field	Value	Comment
onDurationTimer	psf1	
Drx-InactivityTimer	psf1	As appoified in
drx-RetransmissionTimer	sf1	As specified in TS 36.331 [2], Clause 6.3.2
longDRX-CycleStartOffset	sf320	13 30.331 [2], Clause 6.3.2
shortDRX	Disable	

A.8.12.1.2 Test Requirements

The RSTD measurement time fulfils the requirements specified in Clause 8.1.2.5.1.

The UE shall perform and report the RSTD measurements for Cell 2 and Cell 3 with respect to the reference cell in the OTDOA assistance data, Cell 1, within 2560 ms starting from the beginning of time interval T2.

The rate of the correct events for each neighbour cell observed during repeated tests shall be at least 90%, where the reported RSTD measurement for each correct event shall be within the RSTD reporting range specified in Clause 9.1.10.3, i.e., between RSTD 0000 and RSTD 12711.

NOTE: The RSTD measurement time in the test is derived from the following expression, $T_{PRS}(M-1)+160\left|\frac{n}{M}\right|$, where

M=8 and n=16 are the parameters specified in Clause 8.1.2.5.1, Table 8.1.2.5.1-1, under Note 1. This gives the total RSTD measurement time of 2560 ms for Cell 2 and Cell 3 with respect to the reference cell Cell 1.

A.8.12.2 E-UTRAN TDD intra-frequency RSTD measurement reporting delay test case

A.8.12.2.1 Test Purpose and Environment

The purpose of the test is to verify that the RSTD measurement meets the requirements specified in Clause 8.1.2.5.2 in an environment with fading propagation conditions.

In the test there are three synchronous cells: Cell 1, Cell 2 and Cell 3. Cell 1 is the reference as well as the PCell. Cell 2 and Cell 3 are the neighbour cells. All cells are on the same RF channel.

The test consists of three consecutive time intervals, with duration of T1 and T2. Cell 1 is active in T1, T2 and T3, whilst Cell 2 and Cell 3 are activated only in the beginning of T2. Cell 2 is active until the end of T3, and Cell 3 is active until the end of T2. The beginning of the time interval T2 shall be aligned with the first PRS positioning subframe of a positioning occasion in the reference cell, where the PRS positioning occasion is as defined in Clause 8.1.2.5.1. Cell 1 transmits PRS in T2, while Cell 2 transmits PRS only in T3, and Cell 3 transmits PRS only in T2. Note: The information on when PRS is muted is conveyed to the UE using PRS muting information.

The OTDOA assistance data as defined in TS 36.355, Clause 6.5.1, shall be provided to the UE during T1. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of T2, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data.

The test parameters are as given in Table A.8.12.2.1-1, Table A.8.12.2.1-2, Table A.8.12.2.1-3, and Table A.8.12.2.1-4.

Table A.8.12.2.1-1: General test parameters for E-UTRAN TDD intra-frequency RSTD measurement reporting delay under fading propagation conditions

Parameter	Unit	Value	Comment
Reference cell	Jill	Cell 1	Reference is the cell in the OTDOA assistance data with respect to which the RSTD measurement is defined, as specified in TS 36.214 [4] and TS 36.355 [24]. The reference cell is the PCell in this test case.
Neighbor cells		Cell 2 and Cell 3	Cell 2 and Cell 3 appear at random places in the neighbour cell list in the OTDOA assistance data, but Cell 2 always appears in the first half of the list, whilst Cell 3 appears in the second half of the list.
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Channel Bandwidth (BW _{channel})	MHz	10	
PRS Transmission Bandwidth	RB	50	PRS are transmitted over the system bandwidth
PRS configuration index I_{PRS}		174	This corresponds to periodicity of 320 ms and PRS subframe offset of $I_{\rm PRS}-160$ DL subframes, as defined in TS 36.211 [16], Table 6.10.4.3-1
Number of consecutive downlink positioning subframes N_{PRS}		1	As defined in TS 36.211 [16]. The number of subframes in a positioning occasion
Physical cell ID PCI		(PCI of Cell 1 – PCI of Cell 2)mod6=0 and (PCI of Cell 1 – PCI of Cell 3)mod6=0	The cell PCIs are selected such that the relative shifts of PRS patterns among cells are as given by the test parameters
TDD uplink-downlink configuration		1	As specified in TS 36.211 [16], Clause 4.2; corresponds to a configuration with 5 ms switch-point periodicity and two downlink consecutive subframes
TDD special subframe configuration		6	As specified in TS 36.211 [16], Clause 4.2; corresponds to DwPTS of $19760 \cdot T_{\rm s}$ and UpPTS of $4384 \cdot T_{\rm s}$
CP length		Normal	The same CP length applies for DL and UL
DRX		ON	DRX parameters are further specified in Table A.8.12.2.1-3
Radio frame receive time offset between the cells at the UE antenna connector	μs	Cell 2 to Cell 1: 1 Cell 3 to Cell 1: -1	PRS are transmitted from synchronous cells
Expected RSTD	μs	Cell 2: 3 Cell 3: 3 Other neighbour cells: randomly between -3 and 3	The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator
Expected RSTD uncertainty for all neighbour cells	μs	5	The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD-Uncertainty index
Number of cells provided in OTDOA assistance data		16	Including the reference cell
PRS muting info		Cell 1: '11110000' Cell 2: '00001111' Cell 3: '11110000'	Correponds to prs-MutingInfo defined in TS 36.355 [24]
T1	s	3	The length of the time interval from the beginning of each test
T2	s	1.28	The length of the time interval that follows immediately after time interval T1
Т3	s	1.28	The length of the time interval that follows immediately after time interval T2

Table A.8.12.2.1-2: Cell-specific test parameters for E-UTRAN TDD intra-frequency RSTD measurement reporting delay under fading propagation conditions during T1

Parameter	Unit	Cell 1	Cell 2	Cell 3	
E-UTRA RF Channel		1	1	1	
Number		•	-	•	
Correlation Matrix and		1x2 Low	1x2 Low	1x2 Low	
Antenna Configuration					
OCNG patterns		OP.1 TDD	N/A	N/A	
defined in A.3.2.2		OI .1 100	IN/A	IN/A	
PBCH_RA					
PBCH_RB					
PSS_RA					
SSS_RA					
PCFICH_RB					
PHICH_RA	dB	0	N/A	N/A	
PHICH_RB					
PDCCH_RA					
PDCCH_RB					
OCNG_RA Note 1					
OCNG_RB Note 1					
	dBm/		O.F.		
$N_{oc}^{ m Note 3}$	15 kHz		-95		
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{oc}$	dB	-Infinity	-Infinity	-Infinity	
	dBm/	•	•	•	
lo Note 4	9 MHz	-67.22	N/A	N/A	
^					
$\hat{\mathbf{E}}_{\mathrm{s}}/N_{oc}$	dB	0	-Infinity	-Infinity	
Propagation Condition		ETU30			

- Note 1: OCNG shall be used such that active cell (Cell 1) is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.
- Note 3: Interference from other cells and noise sources not specified in the test are assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
- Note 4: lo levels have been derived from other parameters and are given for information purpose. These are not settable test parameters.

Table A.8.12.2.1-3: Cell-specific test parameters for E-UTRAN TDD intra-frequency RSTD measurement reporting delay under fading propagation conditions

Parameter	Unit	Ce	II 1	Cel	1 2	Ce	ell 3
		T2	Т3	T2	Т3	T2	Т3
E-UTRA RF Channel			1	1			1
Number			-				
Correlation Matrix and		1x2	Low	1x2 L	_OW	1x2	Low
Antenna Configuration							
OCNG patterns		OP 1	TDD	OP.2	TDD	OP.2	N/A
defined in A.3.2.2		01.1	100	01 .2	100	TDD	14// (
PBCH_RA	 						
PBCH_RB	<u> </u>						
PSS_RA	<u> </u>						
SSS_RA	<u> </u>						
PCFICH_RB	<u> </u>						
PHICH_RA	dB	(0	0		0	N/A
PHICH_RB]						
PDCCH_RA	<u> </u>						
PDCCH_RB]						
OCNG_RA Note 1	<u> </u>						
OCNG_RB Note 1							
PRS_RA	dB	-3	N/A	N/A	3	3	N/A
$N_{oc}^{ m Note 3}$	dBm/ 15 kHz	-98	-95	-98	-95	-98	-95
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}$	dB	-1	-Infinity	-Infinity	-7	-7	-Infinity
PRS $\hat{E}_{_{s}}/I_{_{ot}}^{}$ Note 4	dB	-1.79	-Infinity	-Infinity	-7	-9.54	-Infinity
lo Note 4	dBm/ 9 MHz	-69.55	-67.08	-69.55	-67.08	-69.55	N/A
PRP Note 4	dBm/ 15 kHz	-99	-Infinity	-Infinity	-102	-105	-Infinity
RSRP Note 4	dBm/ 15 kHz	-96	-93	-105	-105	-108	-Infinity
$\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}^{\mathrm{Note 4}}$	dB	2	2	-7	-10	-10	-Infinity
Propagation Condition		ETU30					

Note 1: OCNG shall be used such that active cells (all, except Cell 3 in T3) are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols other than those in the subframes with transmitted PRS.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period

Note 3: Interference from other cells and noise sources not specified in the test and assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: If PRS_RA is not "N/A", \hat{E}_s/N_{oc} , PRS \hat{E}_s/I_{ot} , Io, RSRP and PRP levels have been derived from other parameters and are given for information purpose. If PRS_RA is "N/A", Io and RSRP levels have been derived from other parameters and are given for information purpose. These are not settable test parameters. Interference conditions shall be applied to all PRS symbols of DL positioning subframes.

Table A.8.12.2.1-4: DRX parameters for the test of E-UTRAN TDD intra-frequency RSTD measurement reporting delay under fading propagation conditions

Field	Value	Comment
onDurationTimer	psf1	
drx-InactivityTimer	psf1	As appoified in
drx-RetransmissionTimer	sf1	As specified in TS 36.331 [2], Clause 6.3.2.
longDRX-CycleStartOffset	sf320	13 30.331 [2], Clause 6.3.2.
shortDRX	disable	

A.8.12.2.2 Test Requirements

The RSTD measurement time fulfils the requirements specified in Clause 8.1.2.5.2.

The UE shall perform and report the RSTD measurements for Cell 2 and Cell 3 with respect to the reference cell in the OTDOA assistance data, Cell 1, within 2560 ms starting from the beginning of time interval T2.

The rate of the correct events for each neighbour cell observed during repeated tests shall be at least 90%, where the reported RSTD measurement for each correct event shall be within the RSTD reporting range specified in Clause 9.1.10.3, i.e., between RSTD 0000 and RSTD 12711.

NOTE: The RSTD measurement time in the test is derived from the following expression, $T_{PRS}(M-1)+160\left[\frac{n}{M}\right]$,

where M =8 and n =16 are the parameters specified for this test case in Clause 8.1.2.5.2, Table 8.1.2.5.2-1, under Note 1. This gives the total RSTD measurement time of 2560 ms for Cell 2 and Cell 3 with respect to the reference cell Cell 1.

A.8.13 RSTD Inter-frequency Measurements

A.8.13.1 E-UTRAN FDD-FDD inter-frequency RSTD measurement reporting delay test case with the reference cell on the serving carrier frequency

A.8.13.1.1 Test Purpose and Environment

The purpose of the test is to verify that the FDD-FDD inter-frequency RSTD measurement meets the requirements specified in Clause 8.1.2.6.1, specifically for Note 2 in Table 8.1.2.6.1-1, in an environment with fading propagation conditions.

In the test there are three synchronous cells: Cell 1, Cell 2 and Cell 3. Cell 1 is the reference as well as the PCell. Cell 2 and Cell 3 are the neighbour cells. Cell 1 is on FDD RF channel 1. Cell 2 and Cell 3 are on a FDD RF channel 2.

The UE requires measurement gaps to perform inter-frequency measurements. Gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided and configured to not overlap with PRS subframes of Cell 1.

The test consists of three consecutive time intervals, with duration of T1, T2 and T3. Cell 1 is active in T1, T2 and T3, whilst Cell 2 and Cell 3 are activated only in the beginning of T2. Cell 2 is active until the end of T3, and Cell 3 is active until the end of T2. The beginning of the time interval T2 shall be aligned with the first PRS positioning subframe of a positioning occasion in the Cell 3, where the PRS positioning occasion is as defined in Clause 8.1.2.5.1. Cell 1 and Cell 3 transmit PRS only in T2. Cell 2 transmits PRS only in T3. Note: The information on when PRS is muted is conveyed to the UE using PRS muting information.

The OTDOA assistance data as defined in TS 36.355, Clause 6.5.1, shall be provided to the UE during T1. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of T2, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data. The measurement gap configuration is known and configured in the UE at the start of T1. DRX is configured before T2.

The test parameters are as given in Table A.8.13.1.1-1, Table A.8.13.1.1-2, Table A.8.13.1.1-3 and Table A.8.13.1.1-4.

Table A.8.13.1.1-1: General test parameters for E-UTRAN FDD-FDD inter-frequency RSTD measurement reporting delay under fading propagation conditions

Parameter	Unit	Value	Comment
Reference cell		Cell 1	Reference cell is the cell with respect to which the RSTD measurement is defined, as specified in TS 36.214 [4]. The reference cell is the PCell on RF channel 1 in this test case.
Neighbor cells		Cell 2 and Cell 3	Cells on RF channel 2. The cells appear at random places in the neighbour cell list in the OTDOA assistance data, but Cell 2 always appears in the first half of the list, whilst Cell 3 appears in the second half of the list.
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Channel Bandwidth (BW _{channel})	MHz	10	
PRS Bandwidth	RB	50	PRS bandwidth is as indicated in prs-Bandwidth in the OTDOA assistance data defined in [24]. Here, PRS are transmitted over the system bandwidth
Gap pattern Id		0	As specified in Table 8.1.2.1-1. Applies for measurements on Cell 2 and Cell 3
Gap offset		9	As specified in TS 36.331 [2], Clause 6.3.5
PRS configuration index I_{PRS}		Cell 1: 181, Cell 2, Cell 3: 171	This corresponds to periodicity of 320 ms and PRS subframe offset of $I_{\rm PRS}$ -160 DL subframes, as defined in TS 36.211 [16], Table 6.10.4.3-1
Number of consecutive downlink positioning subframes N_{PRS}		1	As defined in TS 36.211 [16]. The number of subframes in a positioning occasion
Physical cell ID PCI		(PCI of Cell 1 – PCI of Cell 2)mod6=0 and (PCI of Cell 1 – PCI of Cell 3)mod6=0	The cell PCIs are selected such that the relative shifts of PRS patterns among cells are as given by the test parameters
CP length		Normal	
DRX		ON	DRX parameters are further specified in Table A.8.13.1.1-3.
prs-SubframeOffset		310	Number of subframes rounded to the closest integer. The corresponding parameter in the OTDOA assistance data is prs- SubframeOffset specified in TS 36.355 [24]
slotNumberOffset		0	The slot number offset at the transmitter between a neighbour cell and the assistance data reference cell specified in TS 36.355 [24]
Radio frame receive time offset between the cells at the UE antenna connector	μs	Cell 2 to Cell 1: 1 Cell 3 to Cell 1: -1	PRS are transmitted from synchronous cells
Expected RSTD	μs	Cell 2: -2 Cell 3: 2 Other neighbour cells: randomly between -3 and 3	The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator

Expected RSTD uncertainty for all neighbour cells	μs	5	The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD-Uncertainty index
Number of cells provided in OTDOA assistance data		16	The list includes the reference cell (received in <i>OTDOA-ReferenceCellInfo</i> [24]) on RF channel 1 and 15 other cells on RF channel 2, all received in <i>OTDOA-ProvideAssistanceData</i> [24].
PRS muting info		Cell 1: '1111111100000000' Cell 2: '000000011111111' Cell 3: '1111111100000000'	Correponds to prs-MutingInfo defined in TS 36.355 [24]
T1	S	3	The length of the time interval from the beginning of each test
T2	S	2.48	The length of the time interval that follows immediately after time interval T1
ТЗ	S	2.48	The length of the time interval that follows immediately after time interval T2

Table A.8.13.1.1-2: Cell-specific test parameters for E-UTRAN FDD-FDD inter-frequency RSTD measurement reporting delay under fading propagation conditions during T1

Parameter	Unit	Cell 1	Cell 2	Cell 3
E-UTRA RF Channel		1	N/A	N/A
Number		Į.	IN/A	IN/A
Correlation Matrix and		1x2 Low	1x2 Low	1x2 Low
Antenna Configuration				
OCNG patterns		OP.5 FDD	N/A	N/A
defined in A.3.2.1		OI .51 DD	IN/A	IN/A
PBCH_RA				
PBCH_RB				
PSS_RA				
SSS_RA				
PCFICH_RB				
PHICH_RA	dB	0	N/A	N/A
PHICH_RB				
PDCCH_RA				
PDCCH_RB				
OCNG_RA ^{Note 1}				
OCNG_RB ^{Note 1}				
$N_{oc}^{ m Note 3}$	dBm/	-95	N/A	N/A
oc	15 kHz		. ,, .	
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{oc}$	dB	-Infinity	-Infinity	-Infinity
lo Note 4	dBm/	-67.22	N/A	N/A
	9 MHz	01.22	14// (14//
\hat{E}_{s}/N_{oc}	dB	0	-Infinity	-Infinity
Propagation Condition			ETU30	<u> </u>

- Note 1: OCNG shall be used such that the active cell (Cell 1) is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.
- Note 3: Interference from other cells and noise sources not specified in the test are assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{\rm eff}$ to be fulfilled.
- Note 4: lo levels have been derived from other parameters and are given for information purpose. These are not settable test parameters.

Table A.8.13.1.1-3: Cell-specific test parameters for E-UTRAN FDD-FDD inter-frequency RSTD measurement reporting delay under fading propagation conditions during T2 and T3

Parameter	Unit	Cell 1		Cell 2		Cell 3	
		T2	Т3	T2	T3	T2	T3
E-UTRA RF Channel			1	2		2	N/A
Number			-				
Correlation Matrix and		1x2	2 Low	1x2 l	Low	1x2	Low
Antenna Configuration							
OCNG patterns		OP.	5 FDD	OP.6	FDD	OP.6 FDD	N/A
defined in A.3.2.1		_					-
PBCH_RA							
PBCH_RB							
PSS_RA							
SSS_RA							
PCFICH_RB							
PHICH_RA	dB		0	0		0	N/A
PHICH_RB							
PDCCH_RA							
PDCCH_RB							
OCNG_RANote 1							
OCNG_RB ^{Note 1}			T		1		
PRS_RA	dB	-3	N/A	N/A	3	3	N/A
$N_{oc}^{ m Note~3}$	dBm/ 15 kHz	-98	-98	-98	-95	-98	N/A
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}$	dB	-1	-Infinity	-Infinity	-7	-8	-Infinity
PRS $\hat{E}_{s}/I_{ot}^{Note 4}$	dB	-1	-Infinity	-Infinity	-7	-8	-Infinity
lo Note 4	dBm/ 9 MHz	-69.68	-70.22	-70.11	-67.08	-70.11	N/A
PRP Note 4	dBm/ 15 kHz	-99	-Infinity	-Infinity	-102	-106	-Infinity
RSRP Note 4	dBm/ 15 kHz	-96	-96	-105	-105	-109	-Infinity
$\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}^{\mathrm{Note 4}}$	dB	2	2	-7	-10	-11	-Infinity
Propagation Condition				ETU	30		

Note 1: OCNG shall be used such that active cells (all, except Cell 3 in T3) are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols other than those in the subframes with transmitted PRS.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period

Note 3: Interference from other cells and noise sources not specified in the test are assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: If PRS_RA is not "N/A", \hat{E}_s/N_{oc} , PRS \hat{E}_s/I_{ot} , Io, RSRP and PRP levels have been derived from other parameters and are given for information purpose. If PRS_RA is "N/A", Io and RSRP levels have been derived from other parameters and are given for information purpose. These are not settable test parameters. Interference conditions shall be applied to all PRS symbols of DL positioning subframes

Table A.8.13.1.1-4: DRX parameters for the test of E-UTRAN FDD-FDD inter-frequency RSTD measurement reporting delay under fading propagation conditions

Field	Value	Comment
onDurationTimer	psf1	
Drx-InactivityTimer	psf1	As appoiling in
drx-RetransmissionTimer	sf1	As specified in TS 36.331 [2], Clause 6.3.2
longDRX-CycleStartOffset	sf320	13 30.331 [2], Clause 6.3.2
shortDRX	Disable	

A.8.13.1.2 Test Requirements

The RSTD measurement time fulfils the requirements specified in Clause 8.1.2.6.1.

The UE shall perform and report the RSTD measurements for Cell 2 and Cell 3 with respect to the reference cell Cell 1 within 4960 ms starting from the beginning of time interval T2.

The rate of the correct events for each neighbour cell observed during repeated tests shall be at least 90%, where the reported RSTD measurement for each correct event shall be within the RSTD reporting range specified in Clause 9.1.10.3, i.e., between RSTD 0000 and RSTD 12711.

NOTE: The RSTD measurement time in the test is derived from the following expression, $T_{PRS}(M-1)+160\left[\frac{n}{M}\right]$,

where M = 16 and n = 16 are the parameters specified in Clause 8.1.2.6.1, Table 8.1.2.6.1-1, under Note 2. This gives the total RSTD measurement time of 4960 ms for Cell 2 and Cell 3 with respect to the reference cell Cell 1.

A.8.13.2 E-UTRAN TDD-TDD inter-frequency RSTD measurement reporting delay test case with the reference cell on the serving carrier frequency

A.8.13.2.1 Test Purpose and Environment

The purpose of the test is to verify that the TDD-TDD inter-frequency RSTD measurement meets the requirements specified in Clause 8.1.2.6.3, specifically for Note 2 in Table 8.1.2.6.3-1, in an environment with fading propagation conditions.

In the test there are three synchronous cells: Cell 1, Cell 2 and Cell 3. Cell 1 is the reference as well as the PCell. Cell 2 and Cell 3 are the neighbour cells. Cell 1 is on TDD RF channel 1. Cell 2 and Cell 3 are on TDD RF channel 2.

The UE requires measurement gaps to perform inter-frequency measurements. Gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided and configured to not overlap with PRS subframes of Cell 1.

The test consists of three consecutive time intervals, with duration of T1 and T2. Cell 1 is active in T1, T2 and T3, whilst Cell 2 and Cell 3 are activated only in the beginning of T2. Cell 2 is active until the end of T3, and Cell 3 is active until the end of T2. The beginning of the time interval T2 shall be aligned with the first PRS positioning subframe of a positioning occasion in the Cell 3, where the PRS positioning occasion is as defined in Clause 8.1.2.5.1. Cell 1 and Cell 3 transmit PRS only in T2. Cell 2 transmits PRS only in T3. Note: The information on when PRS is muted is conveyed to the UE using PRS muting information.

The OTDOA assistance data as defined in TS 36.355, Clause 6.5.1, shall be provided to the UE during T1. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of T2, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data. The measurement gap configuration is known and configured in the UE at the start of T1. DRX is configured before T2.

The test parameters are as given in Table A.8.13.2.1-1, Table A.8.13.2.1-2, Table A.8.13.2.1-3, and Table A.8.13.2.1-4.

Table A.8.13.2.1-1: General test parameters for E-UTRAN TDD-TDD inter-frequency RSTD measurement reporting delay under fading propagation conditions

Parameter	Unit	Value	Comment
Reference cell		Cell 1	Reference cell is the cell with respect to which the RSTD measurement is defined, as specified in TS 36.214 [4]. The reference cell is the PCell on RF channel 1 in this test case.
Neighbor cells		Cell 2 and Cell 3	Cells on RF channel 2. The cells appear at random places in the neighbour cell list in the OTDOA assistance data, but Cell 2 always appears in the first half of the list, whilst Cell 3 appears in the second half of the list.
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Channel Bandwidth (BW _{channel})	MHz	10	
PRS Bandwidth	RB	50	PRS bandwidth is as indicated in prs- Bandwidth in the OTDOA assistance data defined in [24]. Here, PRS are transmitted over the system bandwidth
Gap pattern Id		0	As specified in Table 8.1.2.1-1. Applies for measurements on Cell 2 and Cell 3
Gap offset		12	As specified in TS 36.331 [2], Clause 6.3.5
PRS configuration index $I_{\rm PRS}$		Cell 1: 184, Cell 2, Cell 3: 174	This corresponds to periodicity of 320 ms and PRS subframe offset of $I_{\rm PRS}-160$ DL subframes, as defined in TS 36.211 [16], Table 6.10.4.3-1
Number of consecutive downlink positioning subframes N_{PRS}		1	As defined in TS 36.211 [16]. The number of subframes in a positioning occasion
Physical cell ID PCI		(PCI of Cell 1 – PCI of Cell 2)mod6=0 and (PCI of Cell 1 – PCI of Cell 3)mod6=0	The cell PCIs are selected such that the relative shifts of PRS patterns among cells are as given by the test parameters
TDD uplink-downlink configuration		1	As specified in TS 36.211 [16], Clause 4.2; corresponds to a configuration with 5 ms switch-point periodicity and two downlink consecutive subframes
TDD special subframe configuration		6	As specified in TS 36.211 [16], Clause 4.2; corresponds to DwPTS of $19760 \cdot T_{\rm s}$ and UpPTS of $4384 \cdot T_{\rm s}$
CP length		Normal	The same CP length for DL and UL
DRX		ON	DRX parameters are further specified in Table A.8.13.2.1-3.
prs-SubframeOffset		310	Number of subframes rounded to the closest integer. The corresponding parameter in the OTDOA assistance data is prs-SubframeOffset specified in TS 36.355 [24]
slotNumberOffset		0	The slot number offset at the transmitter between a neighbour cell and the assistance data reference cell specified in TS 36.355 [24]
Radio frame receivetime offset between the cells at the UE antenna connecto	μs	Cell 2 to Cell 1: 1 Cell 3 to Cell 1: -1	PRS are transmitted from synchronous cells
Expected RSTD	μs	Cell 2: -2 Cell 3: 2 Other neighbour cells: randomly between -3 and 3	The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator
Expected RSTD uncertainty for all neighbour cells	μs	5	The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD-Uncertainty index

Number of cells provided in OTDOA assistance data		16	The list includes the reference cell (received in OTDOA-ReferenceCellInfo [24]) on RF channel 1 and 15 other cells on RF channel 2, all received in OTDOA-ProvideAssistanceData [24].
PRS muting info		Cell 1: '1111111100000000' Cell 2: '000000011111111' Cell 3: '1111111100000000'	Correponds to prs-MutingInfo defined in TS 36.355 [24]
T1	s	3	The length of the time interval from the beginning of each test
T2	s	2.48	The length of the time interval that follows immediately after time interval T1
Т3	s	2.48	The length of the time interval that follows immediately after time interval T2

Table A.8.13.2.1-2: Cell-specific test parameters for E-UTRAN TDD-TDD inter-frequency RSTD measurement reporting delay under fading propagation conditions during T1

Parameter	Unit	Cell 1	Cell 2	Cell 3
E-UTRA RF Channel Number		1	N/A	N/A
Correlation Matrix and Antenna Configuration		1x2 Low	1x2 Low	1x2 Low
OCNG patterns defined in A.3.2.2		OP.1 TDD	N/A	N/A
PBCH_RA PBCH_RB				
PSS_RA SSS_RA				
PCFICH_RB PHICH_RA	dB	0	N/A	N/A
PHICH_RB PDCCH_RA				
PDCCH_RB OCNG_RA ^{Note 1} OCNG_RB ^{Note 1}				
N_{oc} Note 3	dBm/ 15 kHz	-95	N/A	N/A
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{oc}$	dB	-Infinity	-Infinity	-Infinity
Io Note 4	dBm/ 9 MHz	-67.22	N/A	N/A
$\hat{\mathbf{E}}_{\mathrm{s}}/N_{oc}$	dB	0	-Infinity	-Infinity
Propagation Condition			ETU30	

- Note 1: OCNG shall be used such that the active cell (Cell 1) is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period
- Note 3: Interference from other cells and noise sources not specified in the test are assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
- Note 4: Io levels have been derived from other parameters and are given for information purpose. These are not settable test parameters.

Table A.8.13.2.1-3: Cell-specific test parameters for E-UTRAN TDD-TDD inter-frequency RSTD measurement reporting delay under fading propagation conditions

Parameter	Unit	C	ell 1	Cell 2		Cell 3	
		T2	T3	T2	Т3	T2	Т3
E-UTRA RF Channel			1		2		N/A
Number						2	
Correlation Matrix and		1x2	2 Low	1x2	Low	1x2	Low
Antenna Configuration						ļ.,	
OCNG patterns		OP.	1 TDD	OP.2	TDD	OP.2 TDD	N/A
defined in A.3.2.2							
PBCH_RA							
PBCH_RB							
PSS_RA							
SSS_RA							
PCFICH_RB			_	0		0	N/A
PHICH_RA	dB		0				
PHICH_RB							
PDCCH_RA							
PDCCH_RB							
OCNG_RA ^{Note 1}							
OCNG_RB ^{Note 1}	-ID	0	NI/A	N1/A			NI/A
PRS_RA	dB	-3	N/A	N/A	3	3	N/A
$N_{oc}^{ m Note 3}$	dBm/ 15 kHz	-98	-98	-98	-95	-98	N/A
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}$	dB	-1	-Infinity	-Infinity	-7	-8	-Infinity
PRS $\hat{E}_{s}/I_{ot}^{Note 4}$	dB	-1	-Infinity	-Infinity	-7	-8	-Infinity
lo Note 4	dBm/ 9 MHz	-69.68	-70.22	-70.11	-67.08	-70.11	N/A
PRP Note 4	dBm/ 15 kHz	-99	-Infinity	-Infinity	-102	-106	-Infinity
RSRP Note 4	dBm/ 15 kHz	-96	-96	-105	-105	-109	-Infinity
$\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}^{\mathrm{Note 4}}$	dB	2	2	-7	-10	-11	-Infinity
Propagation Condition				ETU	30	•	

Note 1: OCNG shall be used such that active cells (all, except Cell 3 in T3) are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols other than those in the subframes with transmitted PRS.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test and assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{\rm acc}$ to be fulfilled.

Note 4: If PRS_RA is not "N/A", \hat{E}_s/N_{oc} , PRS \hat{E}_s/I_{ot} , Io, RSRP and PRP levels have been derived from other parameters and are given for information purpose. If PRS_RA is "N/A", Io and RSRP levels have been derived from other parameters and are given for information purpose. These are not settable test parameters. Interference conditions shall be applied to all PRS symbols of DL positioning subframes.

Table A.8.13.2.1-4: DRX parameters for the test of E-UTRAN TDD-TDD inter-frequency RSTD measurement reporting delay under fading propagation conditions

Field	Value	Comment
onDurationTimer	psf1	
drx-InactivityTimer	psf1	A - an a sitia di in
drx-RetransmissionTimer	sf1	As specified in TS 36.331 [2], Clause 6.3.2.
longDRX-CycleStartOffset	sf320	13 30.331 [2], Clause 6.3.2.
shortDRX	disable	

A.8.13.2.2 Test Requirements

The RSTD measurement time fulfils the requirements specified in Clause 8.1.2.6.3.

The UE shall perform and report the RSTD measurements for Cell 2 and Cell 3 with respect to the reference cell Cell 1 within 4960 ms starting from the beginning of time interval T2.

The rate of the correct events for each neighbour cell observed during repeated tests shall be at least 90%, where the reported RSTD measurement for each correct event shall be within the RSTD reporting range specified in Clause 9.1.10.3, i.e., between RSTD 0000 and RSTD 12711.

NOTE: The RSTD measurement time in the test is derived from the following expression, $T_{PRS}(M-1)+160\left[\frac{n}{M}\right]$,

where M = 16 and n = 16 are the parameters specified in Clause 8.1.2.6.3, Table 8.1.2.6.3-1, under Note 2. This gives the total RSTD measurement time of 4960 ms for Cell 2 and Cell 3 with respect to the reference cell Cell 1.

A.8.14 E-UTRAN TDD - FDD Inter-frequency Measurements

A.8.14.1 E-UTRAN TDD-FDD Inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells

A.8.14.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the TDD-FDD interfrequency cell search requirements in clause 8.1.2.3.3.

The test parameters are given in Tables A.8.14.1.1-1 and A.8.14.1.1-2. In this test, there are two cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.14.1.1-1: General test parameters for E-UTRAN TDD-FDD inter-frequency event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
Cell 1 PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
Cell 1 PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Cell1 Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211.
Cell1 Uplink-downlink configuration		1	As specified in TS 36.211 clause 4.2 Table 4.2-2.
Cell 2 PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Cell 1 E-UTRA TDD RF Channel Number		1	One TDD carrier frequency is used.
Cell 2 E-UTRA FDD RF Channel Number		2	One FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2	Cell 2 is on RF channel number 2
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	ÖFF
Time offset between cells		3 ms	Asynchronous cells
T1	S	5	
T2	S	5	

Table A.8.14.1.1-2: Cell specific test parameters for E-UTRAN TDD-FDD inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells

Parameter	Unit	Ce	II 1	Ce	Cell 2		
		T1	T2	T1	T2		
E-UTRA RF Channel		,	1		2		
Number							
BW _{channel}	MHz	1	0		10		
Correlation Matrix and		1x2	Low	1x2	2 Low		
Antenna Configuration							
OCNG Patterns							
defined in A.3.2.2.1		OP.1	TDD	OP.2	2 FDD		
(OP.1 TDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB			0			
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		_				
PHICH_RB	dB	()				
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$N_{_{oc}}^{}$ Note 3	dBm/15 kHz			-98			
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91		
\hat{E}_{s}/I_{ot}	dB	4	4	-Infinity	7		
SCH_RP Note 4	dBm/15 kHz	-94	-94 -94		-91		
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7		
Propagation Condition							
	e used such that bo	th cells are fully	allocated and a	a constant total tra	nsmitted power		
	ty is achieved for all						
Note 2: The resources for unlink transmission are assigned to the LIE prior to the start of time period T2							

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant

over subcarriers and time and shall be modelled as AWGN of appropriate power for $\,N_{oc}\,$ to be

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.14.1.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 3840 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.14.2 E-UTRAN TDD-FDD Inter-frequency event triggered reporting when DRX is used under fading propagation conditions in asynchronous cells

A.8.14.2.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These test will partly verify the TDD-FDD inter-frequency cell search requirements when DRX is used in clause 8.1.2.3.

The common test parameters are given in Tables A.8.14.2.1-1 and A.8.14.2.1-2. DRX configuration for Test1 and Test2 are given in Table A.8.14.2.1-3 and time alignment timer and scheduling request related parameters in Table A.8.14.2.1-4. In these tests, there are two cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignmend. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The tests consist of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.14.2.1-1: General test parameters for E-UTRAN TDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Parameter	Unit	Test 1 Test 2		Comment
		Val	lue	
Cell1 PDSCH parameters		DL Reference Measurement		As specified in clause A.3.1.1.2. Note that
		Channel R.0 TDD		UE may only be allocated at On Duration
Cell1PCFICH/PDCCH/PHIC		DL Reference Me	asurement	As specified in clause A.3.1.2.2.
H parameters		Channel R.6 TDD		
Cell2 PDSCH parameters		DL Reference Me	asurement	As specified in clause A.3.1.1.1. Note that
		Channel R.0 FDD		UE may only be allocated at On Duration
Cell2PCFICH/PDCCH/PHIC		DL Reference Me	asurement	As specified in clause A.3.1.2.1.
H parameters		Channel R.6 FDD)	
E-UTRA RF Channel		1		one TDD carrier frequencies is used.
Number				
E-UTRA RF Channel		2	<u> </u>	one FDD carrier frequencies is used.
Number				
Channel Bandwidth	MHz	1	0	
(BW _{channel})				
Active cell		Cell 1		Cell 1 is on RF channel number 1
Neighbour cell		Ce	II 2	Cell 2 is on RF channel number 2
Gap Pattern Id		()	As specified in TS 36.133 clause 8.1.2.1.
Cell1 Uplink-downlink		1		As specified in TS 36.211 clause 4.2 Table
configuration				4.2-2
Cell1 Special subframe		(6	As specified in table 4.2-1 in TS 36.211.
configuration				The same configuration in both cells
A3-Offset	dB	-(6	
Hysteresis	dB	(<u> </u>	
CP length		Nor	mal	
TimeToTrigger	S	()	
Filter coefficient		()	L3 filtering is not used
PRACH configuration		4		As specified in table 5.7.1-3 in TS 36.211
Access Barring Information	-	Not Sent		No additional delays in random access
_				procedure.
DRX		ON		DRX related parameters are defined in
				Table A.8.14.2.1-3
Time offset between cells		3 ms		Asynchronous cells
T1	S	5	5	
T2	S	5	30	

Table A.8.14.2.1-2: Cell specific test parameters for E-UTRAN TDD-FDD inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells

Parameter	Unit	Ce	Cell 1		Cell 2		
		T1	T2	T1 T2			
E-UTRA RF Channel			1		2		
Number							
BW _{channel}	MHz	,	10		10		
Correlation Matrix and		1x2	Low	1x	2 Low		
Antenna Configuration							
OCNG Patterns							
defined in A.3.2.2.1		OP.1	TDD	OP	.2 FDD		
(OP.1 TDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		_				
PHICH_RB	dB		0	0			
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$N_{oc}^{ m Note~2}$	dBm/15 kHz	-98					
RSRP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91		
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	-Infinity	7		
SCH_RP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91		
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7		
Propagation Condition							

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Table A.8.14.2.1-3: drx-Configuration to be used in E-UTRAN TDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Field	Test1	Test2	Comment
rieiu	Value	Value	
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Table A.8.14.2.1-4: *TimeAlignmentTimer* and *sr-ConfigIndex* -Configuration to be used in E-UTRAN TDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Field	Test1	Test2	Comment
rieid	Value	Value	
TimeAlignmentTimer	sf500	sf500	For further information see clause 6.3.2 in TS 36.331.
sr-ConfigIndex	2	2	For further information see clause 6.3.2 in TS 36.331 and 10.1 in TS 36.213.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.14.2.2 Test Requirements

In Test1 the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 3840 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE send the measurement report on PUSCH.

In Test2 the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 20*1280ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report

A.8.14.3 E-UTRAN TDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

A.8.14.3.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in clause 8.1.2.3.6.

The test scenario comprises of one E-UTRA FDD carriers and one cell on each carrier as given in tables A.8.14.3.1-1 and A.8.14.3.1-2. PDCCHs indicating new transmissions shall be sent continuously to ensure that the UE would have ACK/NACK sending during identifying a new CGI of E-UTRAN cell. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-frequency monitoring.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE. Measurement gaps shall be deconfigured before the start of T3.

Table A.8.14.3.1-1: General test parameters for E-UTRAN TDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Parameter	Unit	Value	Comment
Cell1PDSCH parameters		DL Reference Measurement	As specified in clause A.3.1.1.2
·		Channel R.0 TDD	
Cell1 PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.2
parameters		Channel R.6 TDD	
Cell2 PDSCH parameters		DL Reference Measurement	As specified in clause A.3.1.1.1
		Channel R.0 FDD	
Cell2 PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.1
parameters		Channel R.6 FDD	
Cell1 E-UTRA RF channel number		1	One TDD carrier is used
Cell2 E-UTRA RF channel number		2	One FDD carrier is used
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1.
Neighbour cell		Cell 2	Cell 1 is on RF channel number 2.
CP length		Normal	
Cell1 special subframe configuration		6	As specified in table 4.2-1 in TS 36.211.
Cell1 Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211.
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
si-RequestForHO		TRUE	As specified in clause 5.5.3.1 in TS 36.331.
Time offset between cells	ms	3	Asynchronous cells
T1	S	5	
T2	s	≤10	
T3	s	5	

Table A.8.14.3.1-2: Cell specific test parameters for E-UTRAN TDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Parameter	Unit		Cell 1			Cell 2			
		T1	T2	Т3	T1	T2	T3		
E-UTRA RF Channel Number			1			2			
BW _{channel}	MHz		10			10			
OCNG Patterns defined in		OP.1 TDD	OP.1 TDD	OP.1 TDD	OP.2	OP.2 FDD	OP.2 FDD		
A.3.2.2.1 (OP.1 TDD) and in					FDD				
A.3.2.1.2 (OP.2 FDD)									
PBCH_RA	dB								
PBCH_RB	dB								
PSS_RA	dB								
SSS_RA	dB								
PCFICH_RB	dB								
PHICH_RA	dB		0 0						
PHICH_PB	dB								
PDCCH_RA	dB								
PDCCH_PB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG_RA ^{Note 1}	dB								
OCNG_RB ^{Note 1}	dB								
\hat{E}_{s}/I_{ot}	dB	4	4	4	-Infinity	7	7		
N _{oc} Note 2	dBm/15 KHz	-98							
\hat{E}_s/N_{oc}	dB	4	4	4	-Infinity	7	7		
RSRP Note 3	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91		
SCH_RP Note3	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91		
Propagation Condition				AW	GN				

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.14.3.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

 $Test\ requirement\ = RRC\ Procedure\ delay+\ T_{identify_CGI,inter} + reporting\ delay$

= 15 + 150 + 2ms from the start of T3

= 167 ms, allow 170 ms.

The UE shall be scheduled continuously throughout the test, and from the start of T3 until 170 ms at least 42 ACK/NACK shall be detected as being transmitted by the UE.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The overall 42 ACK/NACK number is caused by two parts. Firstly, at least 30 ACK/NACK shall be sent during identifying the cell global identifier of cell 2 according to the requirement in Clause 8.1.2.3.7.1. Secondly, given that continuous DL data allocation, and the measurement gaps have been deconfigured before the start of T3, additional 12 ACK/NACK shall be sent from the start of T3 until 170 ms excludes 150 ms for identifying the cell global identifier of cell 2.

A.8.15 E-UTRAN FDD - TDD Inter-frequency Measurements

A.8.15.1 E-UTRAN FDD-TDD Inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells

A.8.15.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the FDD-TDD interfrequency cell search requirements in clause 8.1.2.3.4.

The test parameters are given in Table A.8.15.1.1-1 and A.8.15.1.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.15.1.1-1: General test parameters for E-UTRAN FDD-TDD inter-frequency event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
Cell 1 PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
Cell 1 PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Cell 2 PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Gap Pattern Id		1	As specified in TS 36.133 clause 8.1.2.1.
Cell2 Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. Applicable to Cell 2.
Cell2 Uplink-downlink configuration		1	As specified in TS 36.211 clause 4.2 Table 4.2-2. Applicable to Cell 2.
CP length		Normal	
Cell 1 E-UTRA FDD RF Channel Number		1	One TDD carrier frequency is used.
Cell 2 E-UTRA TDD RF Channel Number		2	One FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2	Cell 2 is on RF channel number 2
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Time offset between cells		3 ms	Asynchronous cells
T1	s	5	
T2	S	10	

Table A.8.15.1.1-2: Cell specific test parameters for E-UTRAN FDD-TDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

E-UTRA RF Channel Number BW_channel SW_channel SW_chan	Parameter	Unit	Cell 1 Cell 2			
Number BW _{channel} MHz 10 10 Correlation Matrix and Antenna Configuration 1x2 Low 1x2 Low OCNG Pattern defined in A.3.2.1.1 (OP.1 FDD) and in A.3.2.2.2 (OP.2 TDD) OP.1 FDD OP.2 TDD PBCH_RA dB BBCH_RB BB		Ī	T1	T2	T1	T2
BW channel	E-UTRA RF Channel		1		2	
Correlation Matrix and Antenna Configuration 1x2 Low	Number					
Antenna Configuration OCNG Pattern defined in A.3.2.1.1 (OP.1 FDD) FDD) and in A.3.2.2.2 (OP.2 TDD) PBCH_RA PBCH_RB PBCH_RB PSS_RA GB PCFICH_RB PHICH_RB PDCCH_RA PDCCH_RA PDCCH_RB PDCCH_RB PDSCH_RB GB PDSCH_RB GB POSCH_RB GCNG_RA GB POSCH_RB GCNG_RB OCNG_RB		MHz	10)	10)
OCNG Pattern defined in A.3.2.1.1 (OP.1 FDD) and in A.3.2.2.2 (OP.2 TDD) OP.1 FDD OP.2 TDD FDD) and in A.3.2.2.2 (OP.2 TDD) OP.1 FDD OP.2 TDD PBCH_RA dB DBCH_RA DB	Correlation Matrix and		1x2 l	Low	1x2 l	_OW
OP.1 FDD	Antenna Configuration					
FDD) and in A.3.2.2.2 (OP.2 TDD) PBCH_RA						
(OP.2 TDD) PBCH_RA dB PBCH_RB dB PBCH_RB dB PSS_RA dB PSS_RA dB PSS_RA dB PCFICH_RB dB PHICH_RA dB PHICH_RB dB PDCCH_RB dB PDSCH_RA dB PDSCH_RB dB OCNG_RB^Note 1 dB OCNG_RB^Note 1 dB DCNG_RB^Note 3 dBm/15 kHz -98 RSRP Note 4 dBm/15 kHz SCH_RP Note 4 dBm/15 kHz -94 -infinity -91			OP.1	FDD	OP.2	TDD
PBCH_RA						
PBCH_RB	(OP.2 TDD)					
PSS_RA	<u> </u>	V				
SSS_RA		V				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PSS_RA	dB				
PHICH_RA dB PHICH_RB dB PDCCH_RA dB PDCCH_RB dB PDSCH_RA dB PDSCH_RB dB PDSCH_RB dB PDSCH_RB dB PDSCH_RB dB PDSCH_RB dB PDSCH_RB dB POCNG_RB^Note 1 dB A 4 4 -Infinity 7 Note 3 dBm/15 kHz -94 -94 -Infinity -91 SCH_RP Note 4 dBm/15 kHz -94 -94 -infinity -91	SSS_RA	dB				
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	PCFICH_RB	dB			0	
PDCCH_RA	PHICH_RA	dB				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PHICH_RB	dB	0			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PDCCH_RA	dB				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PDCCH_RB	dB				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PDSCH_RA	dB				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PDSCH_RB	dB				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	OCNG_RA ^{Note 1}	dB				
$ \hat{E}_{s}/I_{ot} & dB & 4 & 4 & -Infinity & 7 \\ N_{oc} & N_{oc} & dBm/15 \text{ kHz} & -98 \\ \hline RSRP^{Note 4} & dBm/15 \text{ kHz} & -94 & -Infinity & -91 \\ \hline SCH_RP^{Note 4} & dBm/15 \text{ kHz} & -94 & -94 & -infinity & -91 \\ \hline \end{tabular} $	OCNG_RB ^{Note 1}	dB				
RSRP Note 4 dBm/15 kHz -94 -94 -Infinity -91 SCH_RP Note 4 dBm/15 kHz -94 -94 -infinity -91		dB	4	4	-Infinity	7
SCH_RP Note 4 dBm/15 kHz -94 -94 -infinity -91	IV _{oc}	dBm/15 kHz			-98	
		dBm/15 kHz	-94	-94	-Infinity	-91
\hat{E}/N dB 4 4 -Infinity 7	SCH_RP Note 4	dBm/15 kHz	-94	-94	-infinity	-91
- s / · · oc	\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7
Propagation Condition ETU70	Propagation Condition					
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power		e used such that botl	h cells are fully	allocated and a	constant total trans	smitted power
spectral density is achieved for all OFDM symbols.						

Note 2: The resources for uplink transmission are assigned to the UE priori to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be

fulfilled.
RSRP and SCH_RP levels have been derived from other parameters for information purposes.

A.8.15.1.2 Test Requirements

Note 4:

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

They are not settable parameters themselves.

NOTE: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCC

A.8.15.2 E-UTRAN FDD-TDD Inter-frequency event triggered reporting when DRX is used under fading propagation conditions in asynchronous cells

A.8.15.2.1 Test Purpose and Environment

The purpose of these tests is to verify that the UE makes correct reporting of an event in DRX. These tests will partly verify the FDD-TDD inter-frequency cell search requirements when DRX is used in clause 8.1.2.3.4.

The common test parameters are given in Tables A.8.15.2.1-1 and A.8.15.2.1-2. DRX configuration for Test1 and Test2 are given in Table A.8.15.2.1-3 and time alignment timer and scheduling request related parameters in Table A.8.15.2.1-4. In these tests, there are two cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In Test 1 UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle. In Test 2 the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The tests consist of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.15.2.1-1: General test parameters for E-UTRAN FDD-TDD inter-frequency event triggered reporting when DRX is used under fading propagation conditions in asynchronous cells

Parameter	Unit	Test 1	Test 2	Comment
		Va	lue	
Cell 1 PDSCH parameters		DL Reference Me	asurement	As specified in clause A.3.1.1.1 Note that
		Channel R.0 FDD		UE may only be allocated at On Duration
Cell 1		DL Reference Me		As specified in clause A.3.1.2.1.
PCFICH/PDCCH/PHICH		Channel R.6 FDD)	
parameters				
Cell 2 PDSCH parameters		DL Reference Me		As specified in clause A.3.1.1.2 Note that
		Channel R.0 TDD		UE may only be allocated at On Duration
Cell 2		DL Reference Me		As specified in clause A.3.1.2.2.
PCFICH/PDCCH/PHICH		Channel R.6 TDD)	
parameters				
Cell 1 E-UTRA FDD RF		1		One FDD carrier frequency is used.
Channel Number				
Cell 2 E-UTRA TDD RF		2	2	One TDD carrier frequency is used.
Channel Number				
Channel Bandwidth	MHz	1	0	
(BW _{channel})				
Active cell		Ce		Cell 1 is on RF channel number 1
Neighbour cell			II 2	Cell 2 is on RF channel number 2
Gap Pattern Id)	As specified in TS 36.133 clause 8.1.2.1.
A3-Offset	dB	-1		
Hysteresis	dB	(
CP length		Nor		
TimeToTrigger	S)	
Filter coefficient		(L3 filtering is not used
E-UTRA FDD PRACH		4	1	As specified in table 5.7.1-2 in TS 36.211
configuration				
Cell 2 Special subframe		(3	As specified in table 4.2-1 in TS 36.211
configuration				
Cell 2 Uplink-downlink		1		As specified in table 4.2-2 in TS 36.211
configuration				
E-UTRA TDD Access	-	Not Sent		No additional delays in random access
Barring Information				procedure.
DRX		ON		DRX related parameters are defined in
				Table A.8.15.2.1-3
Time offset between cells	ms	3		Asynchronous cells
T1	S	Ę		
T2	S	5	30	

Table A.8.15.2.1-2: Cell specific test parameters for E-UTRAN FDD-TDD inter-frequency event triggered reporting when DRX is used under fading propagation conditions in asynchronous cells

Parameter	Unit	Се	II 1	Cell 2			
		T1	T2	T1	T2		
E-UTRA RF Channel			1		2		
Number							
BW _{channel}	MHz	1	0		10		
Correlation Matrix and		1x2	Low	1x	2 Low		
Antenna Configuration							
OCNG Patterns							
defined in A.3.2.1.1		OP.1	FDD	OP	.2 TDD		
(OP.1 FDD) and in							
A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		,	0			
PHICH_RB	dB	()	0			
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$N_{oc}^{ m Note~2}$	dBm/15 kHz	-98					
RSRP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91		
\hat{E}_{s}/I_{ot}	dB	4	4	-Infinity	7		
SCH_RP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91		
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7		
Propagation Condition			E	TU70			

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.15.2.1-3: drx-Configuration to be used in E-UTRAN FDD-TDD inter-frequency event triggered reporting when DRX is used under fading propagation conditions in asynchronous cells

Field	Test1	Test2	Comment
	Value	Value	
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	
Note: For further information see	clause 6.3.2 in	TS 36.331.	

Table A.8.15.2.1-4: *TimeAlignmentTimer* and *sr-ConfigIndex* -Configuration to be used in E-UTRAN FDD-TDD inter-frequency event triggered reporting when DRX is used under fading propagation conditions in asynchronous cells

Field	Test1	Test2	Comment
rieid	Value	Value	
TimeAlignmentTimer	sf500	sf500	For further information see
Time, digriment time	01000	31000	clause 6.3.2 in TS 36.331.
or Configlinday		0	For further information see
sr-ConfigIndex	0		clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.15.2.2 Test Requirements

In Test1 the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 3840 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE send the measurement report on PUSCH.

In Test2 the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 20*1280ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

A.8.15.3 E-UTRAN FDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

A.8.15.3.1 Test Purpose and Environment

This test is to verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in clause 8.1.2.3.8.

The test scenario comprises of one E-UTRA FDD carrier and one E-UTRA TDD carrier and one cell on each carrier as given in tables A.8.15.3-1 and A.8.15.3-2. PDCCHs indicating new transmissions shall be sent continuously to ensure that the UE would have ACK/NACK sending during identifying a new CGI of E-UTRAN cell. The test consists of three successive time periods, with time durations of T1, T2 and T3 respectively. At the start of time duration T1, the UE does not have any timing information of cell 2. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report. Gap pattern configuration with id #0 as specified in Table 8.1.2.1-1 is configured before T2 begins to enable inter-frequency monitoring.

A RRC message implying SI reading shall be sent to the UE during period T2, after the UE has reported Event A3. The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE. The start of T3 is the instant when the last TTI containing the RRC message implying SI reading is sent to the UE. Measurement gaps shall be deconfigured before the start of T3.

Table A.8.15.3-1: General test parameters for E-UTRAN FDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Parameter	Unit	Value	Comment
Cell1 PDSCH parameters		DL Reference Measurement Channel R.3 FDD	As specified in clause A.3.1.1.1
Cell1 PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Cell2 PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
E-UTRA RF channel number		1, 2	One FDD and one TDD carrier frequency are used.
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1.
Neighbour cell		Cell 2	Cell 1 is on RF channel number 2.
CP length		Normal	
Cell 2 Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211.
Cell 2 Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211.
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	s	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
si-RequestForHO		TRUE	As specified in clause 5.5.3.1 in TS 36.331.
Time offset between cells	ms	3	Asynchronous cells
T1	S	5	-
T2	s	≤10	
T3	s	5	

Table A.8.15.3-2: Cell specific test parameters for E-UTRAN FDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Parameter	Unit		Cell 1		Cell 2				
		T1	T2	T3	T1	T2	T3		
E-UTRA RF Channel Number		1			2				
BW _{channel}	MHz		10		10				
OCNG Patterns defined in		OP.10	OP.10	OP.10	OP.2	OP.2 TDD	OP.2 TDD		
A.3.2.1.10 (OP.10 FDD) and		FDD	FDD	FDD	TDD				
in A.3.2.2.1 (OP.2 TDD)									
PBCH_RA	dB								
PBCH_RB	dB								
PSS_RA	dB								
SSS_RA	dB								
PCFICH_RB	dB		_			_			
PHICH_RA	dB		0			0			
PHICH_PB	dB								
PDCCH_RA	dB								
PDCCH_PB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG_RA ^{Note 1}	dB								
OCNG_RB ^{Note 1}	dB								
\hat{E}_{s}/I_{ot}	dB	4	4	4	-Infinity	7	7		
N _{oc} Note 2	dBm/15 KHz	-98							
\hat{E}_s/N_{oc}	dB	4	4	4	-Infinity	7	7		
RSRP Note 3	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91		
SCH_RP Note3	dBm/15 KHz	-94	-94	-94	-Infinity	-91	-91		
Propagation Condition	Propagation Condition AWGN								

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.15.3.2 Test Requirements

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

 $Test\ requirement = RRC\ Procedure\ delay +\ T_{identify_CGI,inter} + reporting\ delay$

= 15 + 150 + 2ms from the start of T3

= 167 ms, allow 170 ms.

The UE shall be scheduled continuously throughout the test, and from the start of T3 until 170 ms at least 60 ACK/NACK shall be detected as being transmitted by the UE.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The overall 80 ACK/NACK number is caused by two parts. Firstly, at least 60 ACK/NACK shall be sent during identifying the cell global identifier of cell 2 according to the requirement in Clause 8.1.2.3.5.1. Secondly, given that continuous DL data allocation, and the measurement gaps have been deconfigured before the start of T3, additional 20 ACK/NACK shall be sent from the start of T3 until 170 ms excludes 150 ms for identifying the cell global identifier of cell 2.

A.8.16 E-UTRAN Carrier Aggregation Measurements

A.8.16.1 E-UTRAN FDD event triggered reporting under deactivated SCell in non-DRX

A.8.16.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects events A2 (Serving cell becomes worse than threshold) and A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] within the requirements stated in clause 8.3.3.2.1.

The test parameters are given in Tables A.8.16.1.1-1 and A.8.16.1.1-2 below. It is indicated to the UE in the measurement control information that event-triggered reporting with Events A2 (PCell and SCell) and A6 is used. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. During T1 the UE shall not have any information on cell 3. Immediately at beginning of T2 the transmission power of cell 3 is increased to same level as for cell 2, and due to usage of an offset this shall result in reporting of Event A6. At beginning of T3 the transmission powers of cells 1, 2 and 3 are reduced below a threshold value and this shall result in reporting of Event A2 for PCell and SCell, respectively.

Table A.8.16.1.1-1: General test parameters for E-UTRAN FDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions

Parameter		Unit	Value	Comment				
PDSCH parameters			DL Reference Measurement	As specified in clause A.3.1.1.1				
			Channel R.0 FDD					
	PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.1				
	parameters		Channel R.6 FDD	_				
_	E-UTRA RF Channel		1, 2	Two radio channels are used for this test				
	Number Active PCell			Driver and an DE 1				
			Cell 1	Primary cell on RF channel number 1.				
SCel	Configured deactivated SCell		Cell 2	Configured deactivated secondary cell on RF channel number 2.				
Neig	Neighbour cell		Cell 3	Neighbor cell to be identified on RF channel number 2.				
Char	nel Bandwidth	MHz	10	Channel bandwidth for cells on primary				
(BW	channel)		10	and secondary component carriers				
	ength		Normal					
DRX			OFF	Continuous monitoring of primary cell				
A2	Hysteresis	dB	0	Hysteresis for evaluation of event A2.				
	Threshold RSRP	dBm		Actual RSRP threshold for event A2.				
			-93	Needs to take absolute accuracy tolerance				
				in clause 9.1.11.1 into account plus				
				margin.				
	Time To Trigger	S	0					
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.				
	Offset	dB		Offset parameter for evaluation of event				
			-6	A6. Needs to take relative accuracy				
				tolerance in clause 9.1.11.2 into account				
	Depart on leave		Гаја	plus margin.				
	Report on leave		False					
Call	Time To Trigger s Cell-individual offset for cells dB		0	In dividual offers for calle on primary				
	on RF channel number 1		0	Individual offset for cells on primary component carrier.				
	Cell-individual offset for cells		0	Individual offset for cells on secondary				
	on RF channel number 2		0	component carrier.				
	coefficient		0	L3 filtering is not used				
(mea	SCell measurement cycle ms (measCycleSCell)		320					
Cell2	Cell2 timing offset to cell1 µs		0					
Time	Time alignment error µs		≤ Time alignment error as	The value of time alignment error depends				
betw	between cell2 and cell1		specified in TS 36.104 [30] clause 6.5.3.1.	upon the type of carrier aggregation.				
Cell3	Cell3 timing offset to cell1 μs		3	Synchronous cells				
T1 s		•	5	During this time the UE shall be aware of cells 1 and 2 but not cell 3.				
T2		S		UE shall report Event A6 within 6.4s				
'-			≤12	(20×scellMeasCycle)				
T3		S	_	UE shall report Event A2 within 200 ms				
			5	and 1.6s for cells 1 and 2, respectively.				
NOT	E: This test verifies the	e RRM re	equirement which is independent o	f channel bandwidth and is performed according				

NOTE: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.1.1-2: Cell specific test parameters for E-UTRAN FDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions

Parameter	Unit	Cell 1			Cell 2			Cell 3		
		T1	T2	T3	T1	T2	Т3	T1	T2	T3
E-UTRA RF Channel		1		2		2				
Number		1						2		
BW _{channel}	MHz		10		10			10		
Correlation Matrix and		1x2 Low			1x2 Low			1x2 Low		
Antenna Configuration										
OCNG Patterns								_		
defined in A.3.2.1.1		OP.1 FDD		OP.2 FDD			OP.2 FDD			
(OP.1 FDD) and in										
A.3.2.1.2 (OP.2 FDD)										
PBCH_RA	dB									
PBCH_RB	dB	0			0			0		
PSS_RA	dB									
SSS_RA	dB									
PCFICH_RB	dB									
PHICH_RA	dB									
PHICH_RB	dB									
PDCCH_RA	dB									
PDCCH_RB	dB									
PDSCH_RA	dB									
PDSCH_RB	dB									
OCNG_RA ^{Note 1}	dB									
OCNG_RB ^{Note 1}	dB									
Noc Note 2	dBm/15 kHz	-101			-10)1		
RSRP Note 3	dBm/15 kHz	-82	-82	-104	-82	-82	-104	-infinity	-82	-104
Ê _s /I _{ot}	dB	19	19	-3	19	-0.05	-4.76	-infinity	-0.05	-4.76
SCH_RP Note 3	dBm/15 kHz	-82	-82	-104	-82	-82	-104	-infinity	-82	-104
Ê _s /N _{oc}	dB	19 19 -3		19 19 -3		-infinity	19	-3		
Propagation Condition		ETU70								

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

A.8.16.1.2 Test Requirements

The UE shall send one Event A6 triggered measurement report with a measurement reporting delay of less than 6.4s (20×measCycleSCell) from the beginning of time T2.

The UE shall send one Event A2 triggered measurement report for Cell 1 with a measurement reporting delay of less than 200 ms from beginning of time T3.

The UE shall send one Event A2 triggered measurement report for Cell 2 with a measurement reporting delay of less than 1.6s ($5 \times$ measCycleSCell) from beginning of time T3.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90% for each of the events.

NOTE: The actual overall delays measured in the tests may be up to $2 \times TTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.16.2 E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX

A.8.16.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects events A2 (Serving cell becomes worse than threshold) and A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] within the requirements stated in clause 8.3.3.2.1.

The test parameters are given in Tables A.8.16.2.1-1 and A.8.16.2.1-2 below. It is indicated to the UE in the measurement control information that event-triggered reporting with Events A2 (PCell and SCell) and A6 is used. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. During T1 the UE shall not have any information on cell 3. Immediately at beginning of T2 the transmission power of cell 3 is increased to same level as for cell 2, and due to usage of an offset this shall result in reporting of Event A6. At beginning of T3 the transmission powers of cells 1, 2 and 3 are reduced below a threshold value and this shall result in reporting of Event A2 for PCell and SCell, respectively.

Table A.8.16.2.1-1: General test parameters for E-UTRAN TDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions

	Parameter	Unit	Value	Comment		
PDS	CH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2		
	CH/PDCCH/PHICH meters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2		
E-UT	RA RF Channel		1, 2	Two radio channels are used for this test		
	Number Active PCell		Cell 1	Primary cell on RF channel number 1.		
	Configured deactivated			Configured deactivated secondary cell on		
SCel	SCell		Cell 2	RF channel number 2.		
Neig	Neighbour cell		Cell 3	Neighbor cell to be identified on RF channel number 2.		
	nnel Bandwidth	MHz	10	Channel bandwidth for cells on primary and secondary component carriers		
CP I			Normal			
Spec	ial subframe guration		6	As specified in table 4.2.1 in TS 36.211. The same configuration applies to all cells.		
Uplin	k-downlink guration		1	guanor appres to an outer		
DRX			OFF	Continuous monitoring of primary cell		
A2	Hysteresis	dB	0	Hysteresis for evaluation of event A2.		
7.2	Threshold RSRP	dBm	-93	Actual RSRP threshold for event A2. Needs to take absolute accuracy tolerance in clause 9.1.11.1 into account plus margin.		
	Time To Trigger	S	0			
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.		
	Offset	dB	-6	Offset parameter for evaluation of event A6. Needs to take relative accuracy tolerance in clause 9.1.11.2 into account plus margin.		
	Report on leave		False			
	Time To Trigger	S	0			
	individual offset for cells F channel number 1	dB	0	Individual offset for cells on primary component carrier.		
Cell-	ndividual offset for cells F channel number 2	dB	0	Individual offset for cells on secondary component carrier.		
	coefficient		0	L3 filtering is not used		
	I measurement cycle sCycleSCell)	ms	320	_		
	timing offset to cell1	μs	0			
Time	alignment error een cell2 and cell1	ror µs ≤ Time alignme		The value of time alignment error depends upon the type of carrier aggregation.		
Cell3	timing offset to cell1	μs	3	Synchronous cells		
T1		s	5	During this time the UE shall be aware of cells 1 and 2 but not cell 3.		
T2		S	≤12	UE shall report Event A6 within 6.4s (20×scellMeasCycle)		
T3		S	5	UE shall report Event A2 within 200 ms and 1.6s for cells 1 and 2, respectively.		
NOT	F: This test verifies the	e RRM re	u equirement which is independent of	channel bandwidth and is performed according		

NOTE: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.2.1-2: Cell specific test parameters for E-UTRAN TDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions

Parameter	Unit		Cell 1			Cell 2			Cell 3		
		T1	T2	T3	T1	T2	Т3	T1	T2	T3	
E-UTRA RF Channel			1		2			2			
Number		·		2			2				
BW _{channel}	MHz		10		10				10		
Correlation Matrix and			1x2 Low			1x2 Low		,	1x2 Low		
Antenna Configuration											
OCNG Patterns											
defined in A.3.2.2.1		OP.1 TDD		(OP.2 TDD		0	P.2 TDD			
(OP.1 TDD) and in											
A.3.2.2.2 (OP.2 TDD)											
PBCH_RA	dB										
PBCH_RB	dB										
PSS_RA	dB										
SSS_RA	dB										
PCFICH_RB	dB				0			0			
PHICH_RA	dB										
PHICH_RB	dB		0								
PDCCH_RA	dB										
PDCCH_RB	dB										
PDSCH_RA	dB										
PDSCH_RB	dB										
OCNG_RA ^{Note 1}	dB										
OCNG_RB ^{Note 1}	dB										
Noc Note 2	dBm/15 kHz		-101				-10)1			
RSRP Note 3	dBm/15 kHz	-82	-82	-104	-82	-82	-104	-infinity	-82	-104	
Ê _s /I _{ot}	dB	19	19	-3	19	-0.05	-4.76	-infinity	-0.05	-4.76	
SCH_RP Note 3	dBm/15 kHz	-82	-82	-104	-82	-82	-104	-infinity	-82	-104	
Ê _s /N _{oc}	dB	19	19	-3	19	19	-3	-infinity	19	-3	
Propagation Condition											
Note 1: OCNG shall b	e used such that	all cells a	re fully allo	cated and	d a constai	nt total tran	smitted p	ower spec	tral densi	ty is	

achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.

RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable Note 3: parameters themselves.

Note 4: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

A.8.16.2.2 **Test Requirements**

The UE shall send one Event A6 triggered measurement report with a measurement reporting delay of less than 6.4s (20× measCycleSCell) from the beginning of time T2.

The UE shall send one Event A2 triggered measurement report for Cell 1 with a measurement reporting delay of less than 200 ms from beginning of time T3.

The UE shall send one Event A2 triggered measurement report for Cell 2 with a measurement reporting delay of less than 1.6s (5× measCycleSCell) from beginning of time T3.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90% for each of the events.

NOTE: The actual overall delays measured in the tests may be up to 2×TTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.16.3 E-UTRAN FDD-FDD Event triggered reporting on deactivated SCell with PCell interruption in non-DRX

A.8.16.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects event A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] within the requirements stated in clause 8.3.3.2.1 while at the same time fulfilling the requirement on interruption rate.

The test parameters are given in Table A.8.16.3.1-1 and A.8.16.3.1-2 below. In the test there are three synchronous cells: Cell1, Cell2 and Cell3. Cell1 is PCell, Cell2 is deactivated SCell, and Cell3 is the neighbour cell. It is indicated to the UE in the measurement control information that event-triggered reporting with Event A6 is used. The test consists of two successive time periods, with duration of T1 and T2, respectively. During T1 the UE shall not have any information of cell 3. Immediately at beginning of T2 the transmission power of cell 3 is increased to same level as for cell 2, and due to usage of an offset this shall result in reporting of Event A6. PDCCH indicating a new transmission on the PCell shall be sent continuously to ensure that the UE sends ACK/NACKs throughout the test.

Table A.8.16.3.1-1: General test parameters for E-UTRAN FDD-FDD Event triggered reporting on configured but deactivated SCell with PCell interruption in non-DRX

	Parameter	Unit	Value	Comment
PDS	CH parameters		DL Reference Measurement Channel R.3 FDD	As specified in clause A.3.1.1.1
	CH/PDCCH/PHICH meters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
E-UT Num	RA RF Channel ber		1, 2	Two radio channels are used for this test
Activ	e PCell		Cell 1	Primary cell on RF channel number 1.
Conf SCel	igured deactivated I		Cell 2	Configured deactivated secondary cell on RF channel number 2.
Neighbour cell			Cell 3	Neighbor cell to be identified on RF channel number 2.
	nnel Bandwidth	MHz	10	Channel bandwidth for cells on primary and secondary component carriers
CP I			Normal	·
DRX			OFF	Continuous monitoring of primary cell
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.
	Offset	dB	-3	Offset parameter for evaluation of event A6. Needs to take relative accuracy tolerance in clause 9.1.11.2 into account plus margin.
	Report on leave		False	
	Time To Trigger	S	0	
	ndividual offset for cells F channel number 1	dB	0	Individual offset for cells on primary component carrier.
on R	ndividual offset for cells F channel number 2	dB	0	Individual offset for cells on secondary component carrier.
	coefficient		0	L3 filtering is not used
	I measurement cycle	ms	1280	
	timing offset to cell1	μs	0	
	alignment error een cell2 and cell1	μs	≤ Time alignment error as specified in TS 36.104 [30] clause 6.5.3.1.	The value of time alignment error depends upon the type of carrier aggregation.
Cell3	timing offset to cell1	μs	3	Synchronous cells
T1		S	5	During this time the UE shall be aware of cells 1 and 2 but not cell 3.
T2		S	≤30	UE shall report Event A6 within 25.6s (20xscellMeasCycle)
NOT	E: This test verifies the	e RRM red	quirement which is independent of o	channel bandwidth and is performed according

NOTE: This test verifies the RRM requirement which is independent of channel bandwidth and is performed accordin to the principle defined in section A.3.6.1.

Table A.8.16.3.1-2: Cell specific test parameters for E-UTRAN FDD-FDD Event triggered reporting on configured but deactivated SCell with PCell interruption in non-DRX

Parameter	Unit	Се	II 1	Ce	ell 2	Ce	II 3	
		T1	T2	T1	T2	T1	T2	
E-UTRA RF Channel		•	1		2	2		
Number								
BW _{channel}	MHz	1	0	,	10	1	0	
OCNG Pattern defined								
in A.3.2.1.10 (OP.10		OP.10) FDD	OP.2	2 FDD	OP.2 FDD		
FDD) and in A.3.2.1.2								
(OP.2)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB							
PHICH_RB	dB	(0	0		0		
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH RB	dB							
OCNG RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
N_{oc} Note 3	dBm/15 kHz			-	98			
RSRP Note 4	dBm/15 kHz	-82	-82	-82	-82	-Infinity	-82	
\hat{E}_{s}/I_{ot}	dB	16 16		16	-0.11	-Infinity	-0.11	
SCH_RP Note 4	dBm/15 kHz	-82	-82	-82	-82	-Infinity	-82	
\hat{E}_s/N_{oc}	dB	16				-Infinity	16	
Propagation Condition			•	AV	/GN	•	•	

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.16.3.2 Test Requirements

The UE shall send one Event A6 triggered measurement report, with a measurement reporting delay less than 25.6s from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The UE shall be scheduled on PCell continuously throughout the test. From the start of T1 until the measurement report is received during T2, at least 99.5% of all expected ACK/NACKs shall be transmitted by the UE.

For a test to be considered successful requirements on both event detection and percentage of transmitted ACK/NACKs have to be fulfilled simultaneously.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.16.4 E-UTRAN TDD-TDD Event triggered reporting on deactivated SCell with PCell interruption in non-DRX

A.8.16.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects event A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] within the requirements stated in clause 8.3.3.2.1 while at the same time fulfilling the requirement on interruption rate.

The test parameters are given in Table A.8.16.4.1-1 and A.8.16.4.1-2 below. In the test there are three synchronous cells: Cell1, Cell2 and Cell3. Cell1 is PCell, Cell2 is deactivated SCell, and Cell3 is the neighbour cell. It is indicated to the UE in the measurement control information that event-triggered reporting with Event A6 is used. The test consists of two successive time periods, with duration of T1 and T2, respectively. During T1 the UE shall not have any information of cell 3. Immediately at beginning of T2 the transmission power of cell 3 is increased to same level as for cell 2, and due to usage of an offset this shall result in reporting of Event A6. PDCCH indicating a new transmission on the PCell shall be sent continuously to ensure that the UE sends ACK/NACKs throughout the test.

Table A.8.16.4.1-1: General test parameters for E-UTRAN TDD-TDD Event triggered reporting on configured but deactivated SCell with PCell interruption in non-DRX

	Parameter	Unit	Value	Comment
PDS	CH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
	CH/PDCCH/PHICH meters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
E-UT Numl	RA RF Channel per		1, 2	Two radio channels are used for this test
	e PCell		Cell 1	Primary cell on RF channel number 1.
SCell			Cell 2	Configured deactivated secondary cell on RF channel number 2.
Neigh	nbour cell		Cell 3	Neighbor cell to be identified on RF channel number 2.
Chan (BW _c	nel Bandwidth _{hannel})	MHz	10	Channel bandwidth for cells on primary and secondary component carriers
CP le			Normal	
config	ial subframe guration		6	As specified in table 4.2.1 in TS 36.211. The same configuration applies to all cells.
	k-downlink guration		1	
DRX			OFF	Continuous monitoring of primary cell
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.
	Offset	dB	-3	Offset parameter for evaluation of event A6. Needs to take relative accuracy tolerance in clause 9.1.11.2 into account plus margin.
	Report on leave		False	
	Time To Trigger	S	0	
	ndividual offset for cells channel number 1	dB	0	Individual offset for cells on primary component carrier.
	ndividual offset for cells channel number 2	dB	0	Individual offset for cells on secondary component carrier.
	coefficient		0	L3 filtering is not used
SCell	measurement cycle	ms	1280	
	timing offset to cell1	μs	0	
Time	alignment error een cell2 and cell1	μs	≤ Time alignment error as specified in TS 36.104 [30] clause 6.5.3.1.	The value of time alignment error depends upon the type of carrier aggregation.
Cell3	timing offset to cell1	μs	3	Synchronous cells
T1		S	5	During this time the UE shall be aware of cells 1 and 2 but not cell 3.
T2		S	≤30	UE shall report Event A6 within 25.6s (20xscellMeasCycle)

to the principle defined in section A.3.6.1.

Table A.8.16.4.1-2: Cell specific test parameters for E-UTRAN TDD-TDD Event triggered reporting on configured but deactivated SCell with PCell interruption in non-DRX

Parameter	Unit	Се	II 1	Ce	ell 2	Ce	II 3	
		T1	T2	T1	T2	T1	T2	
E-UTRA RF Channel		•	1		2	2	2	
Number								
BW _{channel}	MHz	1	0	•	10	1	0	
OCNG Pattern defined								
in A.3.2.2.1 (OP.1		OP.1	TDD	OP.2	2 TDD	OP.2	TDD	
TDD) and in A.3.2.2.2								
(OP.2 TDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB							
PHICH_RB	dB	(0		0)	
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
N_{oc} Note 3	dBm/15 kHz			-	98			
RSRP Note 4	dBm/15 kHz	-82	-82	-82	-82	-Infinity	-82	
\hat{E}_{s}/I_{ot}	dB	16 16		16	-0.11	-Infinity	-0.11	
SCH_RP Note 4	dBm/15 kHz	-82	-82	-82	-82	-Infinity	-82	
\hat{E}_s/N_{oc}	dB	16	16 16 16		-Infinity	16		
Propagation Condition				AV	VGN	•		

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.16.4.2 Test Requirements

The UE shall send one Event A6 triggered measurement report, with a measurement reporting delay less than 25.6s from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The UE shall be scheduled on PCell continuously throughout the test. From the start of T1 until the measurement report is received during T2, at least 99.5% of all expected ACK/NACKs shall be transmitted by the UE.

For a test to be considered successful requirements on both event detection and percentage of transmitted ACK/NACKs have to be fulfilled simultaneously.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.16.5 E-UTRAN FDD event triggered reporting under deactivated SCell in non-DRX for 20 MHz bandwidth

A.8.16.5.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.1. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.5.1-1 and A.8.16.5.1-2 will replace the values of corresponding parameters in Tables A.8.16.1.1-1 and A.8.16.1.1-2.

Table A.8.16.5.1-1: General test parameters for E-UTRAN FDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions, 20 MHz

Parameter	Unit	Value	Comment			
PDSCH parameters		DL Reference Measurement	As specified in section A.3.1.1.1			
		Channel R.4 FDD				
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1			
parameters		Channel R.10 FDD				
Channel Bandwidth	MHz	30	Channel bandwidth for cells on primary			
(BW _{channel})		20	and secondary component carriers			
A2 Threshold RSRP	dBm		Actual RSRP threshold for event A2.			
		-96	Needs to take absolute accuracy tolerance			
		-90	in clause 9.1.11.1 into account plus			
			margin.			

Note 1: See Table A.8.16.1.1-1 for other general test parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.5.1-2: Cell specific test parameters for E-UTRAN FDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions, 20 MHz

Parameter	Unit	Cell 1			Cell 2			Cell 3				
		T1	T2	Т3	T1	T2	Т3	T1	T2	Т3		
BW _{channel}	MHz		20			20			20			
OCNG Patterns defined in A.3.2.1.11 (OP.11 FDD) and in A.3.2.1.12 (OP.12 FDD)		0	P.11 FDI)	,	OP.12 FD	D	0	P.12 FDD			
N _{oc} Note 2	dBm/15 kHz		-104				-1	04				
RSRP Note 3	dBm/15 kHz	-85	-85	-107	-85	-85	-107	-infinity	-85	-107		
Ê _s /I _{ot}	dB	19	19	-3	19	-0.05	-4.76	-infinity	-0.05	-4.76		
SCH_RP Note 3	dBm/15 kHz	-85	., ., .			-85	-107	-infinity	-85	-107		
Ê _s /N _{oc}	dB	19	19	-3	19	19	-3	-infinity	19	-3		
Note: See Ta												

A.8.16.5.2 Test Requirements

The test requirements defined in section A.8.16.1.2 shall apply to this test case.

A.8.16.6 E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX for 20 MHz bandwidth

A.8.16.6.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.2. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.6.1-1 and A.8.16.6.1-2 will replace the values of corresponding parameters in Tables A.8.16.2.1-1 and A.8.16.2.1-2.

Table A.8.16.6.1-1: General test parameters for E-UTRAN TDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions, 20 MHz

Para	meter	Unit	Value	Comment		
PDSCH paran	neters		DL Reference Measurement	As specified in section A.3.1.1.2		
			Channel R.3 TDD			
PCFICH/PDCCH/PHICH			DL Reference Measurement	As specified in section A.3.1.2.2		
parameters			Channel R.10 TDD			
Channel Band	Channel Bandwidth		20	Channel bandwidth for cells on primary		
(BW _{channel})			20	and secondary component carriers		
A2	Threshold	dBm		Actual RSRP threshold for event A2.		
	RSRP		-96	Needs to take absolute accuracy tolerance		
			-90	in clause 9.1.11.1 into account plus		
				margin.		

Note 1: See Table A.8.16.2.1-1 for other general test parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.6.1-2: Cell specific test parameters for E-UTRAN TDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions, 20 MHz

Parameter	Unit		Cell 1		Cell 2			Cell 3		
		T1	T2	T3	T1	T2	T3	T1	T2	T3
BW _{channel}	MHz		20			20			20	
OCNG										
Patterns		О	P.7 TDD			OP.8 TDE)	OI	P.8 TDD	
defined in										
A.3.2.2.7										
(OP.7 TDD)										
and in										
A.3.2.2.8										
(OP.8 TDD)										
Noc Note 2	dBm/15 kHz		-104				-1	04		
RSRP Note 3	dBm/15 kHz	-85	-85	-107	-85	-85	-107	-infinity	-85	-107
Ê _s /I _{ot}	dB	19	19	-3	19	-0.05	-4.76	-infinity	-0.05	-4.76
SCH_RP Note 3	dBm/15 kHz	-85	-85	-107	-85	-85	-107	-infinity	-85	-107
Ê _s /N _{oc}	dB	19	19	-3	19	19	-3	-infinity	19	-3
Note: See	Table A.8.16.2.1	-2 for other	r cell-spe	cific test	paramete	ers.		·		·

A.8.16.6.2 Test Requirements

The test requirements defined in section A.8.16.2.2 shall apply to this test case.

A.8.16.7 E-UTRA FDD event triggered reporting on deactivated SCell with PCell interruption in non-DRX for 20 MHz bandwidth

A.8.16.7.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.3. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.7.1-1 and A.8.16.7.1-2 will replace the values of corresponding parameters in Tables A.8.16.3.1-1 and A.8.16.3.1-2.

Table A.8.16.7.1-1: General test parameters for E-UTRAN FDD event-triggered reporting on configured but deactivated SCell with PCell interruption in non-DRX, 20 MHz

Parameter	Unit	Value	Comment						
PDSCH parameters		DL Reference Measurement	As specified in section A.3.1.1.1						
		Channel R.6 FDD							
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1						
parameters		Channel R.10 FDD							
Channel Bandwidth	MHz	20	Channel bandwidth for cells on primary						
(BW _{channel})		20	and secondary component carriers						
Note 1: See Table A.8.16.3	.1-1 for o	ther general test parameters.							
Note 2: This test verifies the	·								
to the principle defi	ned in se	ction A.3.6.1.							

Table A.8.16.7.1-2: Cell specific test parameters for E-UTRAN FDD event triggered reporting on configured but deactivated SCell with PCell interruption in non-DRX, 20 MHz

Parameter	Unit	Ce	ell 1	Ce	ell 2	Cel	I 3	
		T1	T2	T1	T2	T1	T2	
BW _{channel}	MHz	2	20	2	20	20		
OCNG Patterns defined in A.3.2.1.17 (OP.17 FDD) and in A.3.2.1.12 (OP.12 FDD)		OP.1	7 FDD	OP.1	2 FDD	OP.12 FDD		
$N_{oc}^{ m Note 3}$	dBm/15 kHz	-1	01	-101				
RSRP Note 4	dBm/15 kHz	-85	-85	-85	-85	-Infinity	-85	
\hat{E}_s/I_{ot}	dB	16	16	16	-0.11	-Infinity	-0.11	
SCH_RP Note 4	dBm/15 kHz	-85	-85	-85	-85	-Infinity	-85	
\hat{E}_s/N_{oc}	dB	16	16	16	16	-Infinity	16	
Note: See Table A.8.	16.3.1-2 for oth	er cell-spe	cific test pa	arameters			•	

A.8.16.7.2 Test Requirements

The test requirements defined in section A.8.16.3.2 shall apply to this test case.

A.8.16.8 E-UTRA TDD event triggered reporting on deactivated SCell with PCell interruption in non-DRX for 20 MHz bandwidth

A.8.16.8.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.4. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.8.1-1 and A.8.16.8.1-2 will replace the values of corresponding parameters in Tables A.8.16.4.1-1 and A.8.16.4.1-2.

Table A.8.16.8.1-1: General test parameters for E-UTRAN TDD event-triggered reporting on configured but deactivated SCell with PCell interruption in non-DRX, 20 MHz

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.3 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.10 TDD	As specified in section A.3.1.2.2
Channel Bandwidth (BW _{channel})	MHz	20	Channel bandwidth for cells on primary and secondary component carriers

Note 1: See Table A.8.16.4.1-1 for other general test parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.8.1-2: Cell specific test parameters for E-UTRAN TDD event triggered reporting on configured but deactivated SCell with PCell interruption in non-DRX, 20 MHz

Parameter	Unit	Ce	II 1	Ce	ell 2	Cel	I 3	
		T1	T2	T1	T2	T1	T2	
BW _{channel}	MHz	2	0	2	20	20)	
OCNG Patterns defined in A.3.2.2.7 (OP.7 TDD) and in A.3.2.2.8 (OP.8 TDD)		OP.7	TDD	OP.8	3 TDD	OP.8 TDD		
$N_{oc}^{$	dBm/15 kHz	-1	01	-101				
RSRP Note 4	dBm/15 kHz	-85	-85	-85	-85	-Infinity	-85	
\hat{E}_{s}/I_{ot}	dB	16	16	16	-0.11	-Infinity	-0.11	
SCH_RP Note 4	dBm/15 kHz	-85	-85	-85	-85	-Infinity	-85	
\hat{E}_s/N_{oc}	dB	16	16	16	16	-Infinity	16	
Note: See Table A.8.16.4	.1-2 for oth	er cell-spe	cific test pa	arameters				

A.8.16.8.2 Test Requirements

The test requirements defined in section A.8.16.4.2 shall apply to this test case.

A.8.16.9 E-UTRAN FDD event triggered reporting under deactivated SCell in non-DRX for 10MHz+5MHz

A.8.16.9.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.1.1.

The test parameters are the same as defined in Subclause A.8.16.1.1 except those described in the following section. The listed parameter values in Tables A.8.16.9.1-1 and A.8.16.9.1-2 will replace the values of corresponding parameters in Tables A.8.16.1.1-1 and A.8.16.1.1-2.

Table A.8.16.9.1-1: General test parameters for E-UTRAN FDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions for 10MHz+5MHz bandwidth

Parameter	Unit	Value	Comment
Channel bandwidth for cells			Channel bandwidth for cells on primary
on primary carriers	MHz	10	carriers
(BW _{channel})			
Channel bandwidth for cells			Channel bandwidth for cells on secondary
on secondary carriers	MHz	5	carriers
(BW _{channel})			

Note 1: See Table A.8.16.1.1-1 for the other general parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.9.1-2: Cell specific test parameters for E-UTRAN FDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions for 10MHz+5MHz bandwidth

Parameter	Unit		Cell 1			Cell 2			Cell 3	
		T1	T2	T3	T1	T2	Т3	T1	T2	Т3
BW _{channel}	MHz		10			5			5	
PDSCH Reference		R.0 FDD				N/A			N/A	
measurement channel										
defined in A.3.1.1.1										
PDSCH allocation	n_{PRB}		13—36		N/A			N/A		
PCFICH/PDCCH/PHIC		ı	R.6 FDD		R.11 FDD			R.11 FDD		
H parameters defined										
in A.3.1.2.1										
OCNG Patterns										
defined in A.3.2.1.1		C	P.1 FDD		OP.16 FDD		OP.16 FDD)	
(OP.1 FDD) and in										
A.3.2.1.16 (OP.16										
FDD)										
Note 1: See Table A.8.16	6.1.1-2 for the	other spe	ecific para	meters	3.					

A.8.16.9.2 **Test Requirements**

The test requirements defined in section A.8.16.1.2 shall apply to this test case.

A.8.16.10 E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX for 10MHz+5MHz

A.8.16.10.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.2.1.

The test parameters are the same as defined in Subclause A.8.16.2.1 except those described in the following section. The listed parameter values in Tables A.8.16.10.1-1 and A.8.16.10.1-2 will replace the values of corresponding parameters in Tables A.8.16.2.1-1 and A.8.16.2.1-2.

Table A.8.16.10.1-1: General test parameters for E-UTRAN TDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions for 10MHz+5MHz bandwidth

Parameter	Unit	Value	Comment
Channel bandwidth for cells on primary carriers (BW _{channel})	MHz	10	Channel bandwidth for cells on primary carriers
Channel bandwidth for cells on secondary carriers (BW _{channel})	MHz	5	Channel bandwidth for cells on secondary carriers

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.10.1-2: Cell specific test parameters for E-UTRAN TDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions for 10MHz+5MHz bandwidth

Parameter	Unit		Cell 1			Cell 2			Cell 3		
		T1	T2	Т3	T1	T2	T3	T1	T2	Т3	
BW _{channel}	MHz		10			5			5		
PDSCH Reference			R.0 TDD		N/A				N/A		
measurement channel											
defined in A.3.1.1.2											
PDSCH allocation	n_{PRB}		13—36		N/A			N/A			
PCFICH/PDCCH/PHIC			R.6 TDD		R.12 TDD			R.12 TDD			
H parameters defined											
in A.3.1.2.2											
OCNG Patterns											
defined in A.3.2.2.1		(OP.1 TDD)	OP.10 TDD		OP.10 TDD)		
(OP.1 TDD) and in											
A.3.2.2.10 (OP.10											
TDD)											
Note 1: See Table A.8	.16.2.1-2 for	the othe	r specific	paramet	ers.						

A.8.16.10.2 Test Requirements

The test requirements defined in section A.8.16.2.2 shall apply to this test case.

A.8.16.11 E-UTRAN FDD event triggered reporting on deactivating SCell with PCell interruption in non-DRX for 10MHz+5MHz

A.8.16.11.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.3. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.11.1-1 and A.8.16.11.1-2 will replace the values of corresponding parameters in Tables A.8.16.3.1-1 and A.8.16.3.1-2.

Table A.8.16.11.1-1: General test parameters for E-UTRAN FDD event triggered reporting on deactivating SCell with PCell interruption in non-DRX for 10MHz+5MHz

Parameter	Unit	Value	Comment		
Channel bandwidth for cells	MHz	10	Channel bandwidth for cells on		
on primary carrier (BW _{channel})			primary component carrier		
PDSCH parameters for cells		DL Reference Measurement	As specified in section A.3.1.1.1		
on primary carriers		Channel R.3 FDD	As specified in section A.S.1.1.1		
PCFICH/PDCCH/PHICH		DL Reference Measurement			
parameters for cells on			As specified in section A.3.1.2.1		
primary carriers		Channel R.6 FDD			
Channel bandwidth for cells			Channel bandwidth for cells on		
on secondary carriers	MHz	5			
(BW _{channel})			secondary component carrier		
PCFICH/PDCCH/PHICH		DL Reference Measurement			
parameters for cells on			As specified in section A.3.1.2.1		
secondary carrier		Channel R.11 FDD			
Note 1: See Table A.8.16.3	.1-1 for o	ther general test parameters.			

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.11.1-2: Cell specific test parameters for E-UTRAN FDD event triggered reporting on deactivating SCell with PCell interruption in non-DRX for 10MHz+5MHz

Parameter	Unit	Cell 1		C	ell 2	Cell 3			
		T1 T2		T1 T2		T1	T2		
BW _{channel}	MHz	10		5		5			
OCNG Patterns defined in A.3.2.1		OP.1	OP.10 FDD OP.16 FDD		6 FDD	OP.16	FDD		
Note: See Table A.8.16.3.1-2 for other cell-specific test parameters.									

A.8.16.11.2 Test Requirements

The test requirements defined in section A.8.16.3.2 shall apply to this test case.

A.8.16.12 E-UTRAN TDD event triggered reporting on deactivating SCell with PCell interruption in non-DRX for 10MHz+5MHz

A.8.16.12.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.4. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.12.1-1 and A.8.16.12.1-2 will replace the values of corresponding parameters in Tables A.8.16.4.1-1 and A.8.16.4.1-2.

Table A.8.16.12.1-1: General test parameters for E-UTRAN TDD event triggered reporting on deactivating SCell with PCell interruption in non-DRX for 10MHz+5MHz

Parameter	Unit	Value	Comment
Channel bandwidth for cells on primary carrier (BW _{channel})	MHz	10	Channel bandwidth for cells on primary component carrier
PDSCH parameters for cells on primary carriers		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters for cells on primary carriers		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Channel bandwidth for cells on secondary carriers (BW _{channel})	MHz	5	Channel bandwidth for cells on secondary component carrier
PDSCH parameters for cells on secondary carrier		DL Reference Measurement Channel R.4 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters for cells on secondary carrier		DL Reference Measurement Channel R.11 TDD	As specified in section A.3.1.2.2

Note 1: See Table A.8.16.4.1-1 for other general test parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.12.1-2: Cell specific test parameters for E-UTRAN TDD event triggered reporting on deactivating SCell with PCell interruption in non-DRX for 10MHz+5MHz

Parameter	Unit	Cell 1		C	ell 2	Cell 3			
		T1	T1 T2		T1 T2		T2		
BW _{channel}	MHz	10		5		5			
OCNG Patterns defined in A.3.2.2		OP.1 TDD OP.10 TDD				OP.10	TDD		
Note: See Table A.8.16.4.1-2 for other cell-specific test parameters.									

A.8.16.12.2 Test Requirements

The test requirements defined in section A.8.16.4.2 shall apply to this test case.

A.8.16.13 E-UTRAN FDD event triggered reporting under deactivated SCell in non-DRX for 5MHz +5 MHz bandwidth

A.8.16.13.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.1. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.13.1-1 and A.8.16.13.1-2 will replace the values of corresponding parameters in Tables A.8.16.1.1-1 and A.8.16.1.1-2.

Table A.8.16.13.1-1: General test parameters for E-UTRAN FDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions, 5MHz +5 MHz bandwidth

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.5 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.11 FDD	As specified in section A.3.1.2.1
Channel Bandwidth (BW _{channel})	MHz	5	Channel bandwidth for cells on primary component carrier
Channel Bandwidth (BW _{channel})	MHz	5	Channel bandwidth for cells on secondary component carrier

Note 1: See Table A.8.16.1.1-1 for other general test parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.13.1-2: Cell specific test parameters for E-UTRAN FDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions, 5MHz +5 MHz bandwidth

Parameter	Unit	Cell 1		Cell 2			Cell 3			
		T1	T2	T3	T1	T2	T3	T1	T2	T3
BW _{channel}	MHz		10		3			3		
OCNG Patterns										
defined in A.3.2.1.15		0	P.15 FDI)	OP.16 FDD			OP.16 FDD		
(OP.15.FDD) and in										
A.3.2.1.16 (OP.16										
FDD)										
Note: See Table A.	.8.16.1.1-2 for o	other cell-	specific t	est parai	neters.					

A.8.16.13.2 Test Requirements

The test requirements defined in section A.8.16.1.2 shall apply to this test case.

A.8.16.14 E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX for 5 MHz +5 MHz bandwidth

A.8.16.14.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.2. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.14.1-1 and A.8.16.14.1-2 will replace the values of corresponding parameters in Tables A.8.16.2.1-1 and A.8.16.2.1-2.

Table A.8.16.14.1-1: General test parameters for E-UTRAN TDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions, 10 MHz +5 MHz bandwidth

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.4.TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.11 TDD	As specified in section A.3.1.2.2
Channel Bandwidth (BW _{channel})	MHz	5	Channel bandwidth for cells on primary component carrier
Channel Bandwidth (BW _{channel})	MHz	5	Channel bandwidth for cells on secondary component carrier

Note 1: See Table A.8.16.2.1-1 for other general test parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.14.1-2: Cell specific test parameters for E-UTRAN TDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions, 10 MHz +5 MHz bandwidth

Parameter	Unit	Cell 1		Cell 2			Cell 3			
		T1	T1 T2 T3		T1 T2 T3		T1	T2	T3	
BW _{channel}	MHz		10		3		3			
OCNG Patterns										
defined in A.3.2.2.9		(OP.9 TDD		OP.10 TDD		OP10 TDD)	
(OP.9 TDD) and in										
A.3.2.2.10 (OP.10										
TDD)										
Note: See Table A.8.16.2.1-2 for other cell-specific test parameters.										

A.8.16.14.2 Test Requirements

The test requirements defined in section A.8.16.2.2 shall apply to this test case.

A.8.16.15 E-UTRA FDD event triggered reporting on deactivated SCell with PCell interruption in non-DRX for 5 +5 MHz bandwidth

A.8.16.15.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.3. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.15.1-1 and A.8.16.14.1-2 will replace the values of corresponding parameters in Tables A.8.16.3.1-1 and A.8.16.3.1-2.

Table A.8.16.15.1-1: General test parameters for E-UTRAN FDD event-triggered reporting on configured but deactivated SCell with PCell interruption in non-DRX, 5 + 5 MHz bandwidth

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.7 FDD (Cell 1)	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.11 FDD	As specified in section A.3.1.2.1
Channel Bandwidth (BW _{channel})	MHz	5	Channel bandwidth for cells on primary and secondary component carriers

Note 1: See Table A.8.16.3.1-1 for other general test parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.15.1-2: Cell specific test parameters for E-UTRAN FDD event triggered reporting on configured but deactivated SCell with PCell interruption in non-DRX, 5+5 MHz bandwidth

Parameter	Unit	Cell 1		C	Cell 2		Cell 2 Cell		I 3						
		T1 T2		T1 T2		T1	T2								
BW _{channel}	MHz	5		5		5									
OCNG Patterns defined															
in A.3.2.1.20 (OP.20		OP.20 FDD		OD 1	6 FDD	OP.16	EDD								
FDD) and in A.3.2.1.16		OP.20 FDD		UP.1	0 FDD	OP.16	רטט								
(OP.16 FDD)															
Note: See Table A.8.1	6.3.1-2 for oth	er cell-spe	cific test pa	arameters	S.										

A.8.16.7.2 Test Requirements

The test requirements defined in section A.8.16.3.2 shall apply to this test case.

A.8.16.16 E-UTRA TDD event triggered reporting on deactivated SCell with PCell interruption in non-DRX for 5+5 MHz bandwidth

A.8.16.16.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.4. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.16.1-1 and A.8.16.16.1-2 will replace the values of corresponding parameters in Tables A.8.16.4.1-1 and A.8.16.4.1-2.

Table A.8.16.16.1-1: General test parameters for E-UTRAN TDD event-triggered reporting on configured but deactivated SCell with PCell interruption in non-DRX, 5+5 MHz bandwidth

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.4 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.11 TDD	As specified in section A.3.1.2.2
Channel Bandwidth (BW _{channel})	MHz	5	Channel bandwidth for cells on primary and secondary component carriers

Note 1: See Table A.8.16.4.1-1 for other general test parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.16.1-2: Cell specific test parameters for E-UTRAN TDD event triggered reporting on configured but deactivated SCell with PCell interruption in non-DRX, 5+5 MHz bandwidth

Parameter	Unit	Cell 1		Cell 2		Cell 3		
		T1 T2		T1 T2		T1	T2	
BW _{channel}	MHz	5		5		5		
OCNG Patterns defined in								
A.3.2.2.9 (OP.9 TDD) and in		OP.9 TDD		OP.10 TDD		OP.10	TDD	
A.3.2.2.10 (OP.10 TDD)								
Note: See Table A.8.16.4	See Table A.8.16.4.1-2 for other cell-specific test parameters.							

A.8.16.16.2 Test Requirements

The test requirements defined in section A.8.16.4.2 shall apply to this test case.

A.8.16.17 E-UTRAN FDD activation and deactivation of known SCell in non-DRX

A.8.16.17.1 Test Purpose and Environment

The purpose of this test is to verify that the SCell activation and deactivation times are within the requirements stated in section 7.7, when the SCell is known by the UE at the time of activation.

The test parameters are given in Tables A.8.16.17.1-1 and cell-specific parameters in A.8.16.17.1-2 below. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. There are two carriers, each with one cell. Both cells have constant signal levels throughout the test. Before the test starts the UE is connected to Cell 1 (PCell) on radio channel 1 (PCC) but is not aware of Cell 2 on radio channel 2. The UE is only monitoring the PCC. The UE shall be continuously scheduled in the PCell throughout the whole test.

At the beginning of T1 the UE receives an RRC message by which the SCell (Cell 2) becomes configured on radio channel 2 (SCC). The UE now starts monitoring also the SCC. The test equipment sends a MAC message for activation of the SCell.

The point in time at which the MAC message is received at the UE antenna connector, in a subframe # denoted m which is an even number, defines the start of time period T2. The UE shall be able to report valid CSI for the activated SCell at latest in subframe (m+24). The UE shall start reporting CSI in subframe (m+8) and shall report CQI index 0 (out-of-range) until the SCell activation has been completed. Any PCell interruption due to activation of SCell shall occur in the subframes (m+5) to (m+9).

Time period T3 starts when a MAC message for deactivation of SCell, sent from the test equipment to the UE in a subframe # denoted n, is received at the UE antenna connector. The UE shall carry out deactivation of the SCell in a subframe (n+8), and any PCell interruption due to the deactivation shall occur in the subframes (n+5) to (n+9).

The test equipment verifies that potential interruption is carried out in the correct time span by monitoring ACK/NACK sent in PCell during activation and deactivation of SCell, respectively.

The test equipment verifies the activation time by counting the subframes from the time when the SCell activation command is sent until a CSI report with other than COI index 0 is received.

The test equipment verifies the deactivation time by counting the subframes from the time when the SCell deactivation command is sent until CQI reporting for SCell is discontinued.

Table A.8.16.17.1-1: General test parameters for known SCell activation case

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.3 FDD (Cell 1)	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
E-UTRA RF Channel Number		1, 2	Two radio channels are used for this test
Active PCell		Cell 1	Primary cell on RF channel number 1.
Configured deactivated SCell		Cell 2	Configured deactivated secondary cell on RF channel number 2.
CP length		Normal	
DRX		OFF	Continuous monitoring of primary cell
CQI/PMI periodicity and offset configuration index		0	CQI reporting for SCell every second subframe
Cell-individual offset for cells on RF channel number 1	dB	0	Individual offset for cells on primary component carrier.
Cell-individual offset for cells on RF channel number 2	dB	0	Individual offset for cells on secondary component carrier.
SCell measurement cycle (measCycleSCell)	ms	320	
Cell2 timing offset to cell1	μs	0	
Time alignment error between cell2 and cell1	μs	≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1.	The value of time alignment error depends upon the type of carrier aggregation.
T1	S	7	During this time the PCell shall be known and the SCell configured and detected.
T2	S	1	During this time the UE shall activate the SCell.
Т3	S	1	During this time the UE shall deactivate the SCell.

te: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.17.1-2: Cell specific test parameters for E-UTRAN FDD known SCell activation

Parameter	Unit		Cell 1			Cell 2	
		T1 T2 T3			T1	T2	T3
E-UTRA RF Channel			1			2	•
Number			ı			2	
BW _{channel}	MHz		10			10	
OCNG Patterns							
defined in A.3.2.1.1		(OP.10 FDD			OP.2 FDD	
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB				0		
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		0				
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
N _{oc} Note 2	dBm/15 kHz		-104			-104	
RSRP Note 3	dBm/15 kHz		-87			-87	
Ê _s /I _{ot}	dB		17			17	
SCH_RP Note 3	dBm/15 kHz	-87			-87		
Ê _s /N _{oc}	dB		17			17	
Propagation Condition					'GN		
	e used such that				d a constai	nt total tran	smitted
	al density is achie						
Note 2: Interference f	rom other cells a	nd noise s	ources not	specified	l in the test	is assume	d to be

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.

Note 3: Es/lot, RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: The uplink resources for CSI reporting are assigned to the UE prior to the start of time period T2.

A.8.16.17.2 Test Requirements

During T2 the UE shall send the first CSI report for SCell in a subframe (m+8), or in a subframe (m+10) if the suframe (m+8) was subject to interruption. Whether CSI report in subframe (m+8) was interrupted or not is checked by monitoring ACK/NACK sent in PCell in subframe (m+8).

During T2 the UE shall start sending CSI reports for SCell with non-zero CQI index at latest in a subframe (m+24).

During T3 the UE shall stop sending CSI reports for SCell at latest in a subframe (n+8).

During T2 interruption of PCell during SCell activation shall not happen outside the subframes (m+5) to (m+9).

During T3 interruption of PCell during SCell deactivation shall not happen outside the subframes (n+5) to (n+9).

The interruption of PCell shall not be more than the values specified for intra-band CA and inter-band CA in Section 7.8.2.

All of the above test requirements shall be fulfilled in order for the observed SCell activation delay and SCell deactivation delay to be counted as correct. The rate of correct observed SCell activation delay and SCell deactivation delay during repeated tests shall be at least 90%.

NOTE: During T2 if there are no uplink resources for reporting the valid CSI in a subframe (m+24) then the UE shall use the next available uplink resource for reporting the corresponding valid CSI.

A.8.16.17A E-UTRAN FDD activation and deactivation of known SCell in non-DRX for 20MHz

991

A.8.16.17A.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.17. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.17A.1-1 and A.8.16.17A.1-2 will replace the values of corresponding parameters in Tables A.8.16.17.1-1 and A.8.16.17.1-2.

Table A.8.16.17A.1-1: General test parameters for known SCell activation case, 20MHz bandwidth

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters		Channel R.10 FDD	7 to opening in section 7 iii 1 i 2 i 1

Table A.8.16.17A.1-2: Cell specific test parameters for E-UTRAN FDD known SCell activation, 20MHz bandwidth

Parameter	Unit		Cell 1			Cell 2		
		T1 T2 T3			T1	T2	T3	
BW _{channel}	MHz	20			20			
OCNG Patterns								
defined in A.3.2.1.17			OP.17 FDD			P.12.FDD		
(OP.17 FDD) and in								
A.3.2.1.12 (OP.12								
FDD)								

A.8.16.17A.2 Test Requirements

The test requirements defined in section A.8.16.17.2 shall apply to this test case.

A.8.16.17B E-UTRAN FDD activation and deactivation of known SCell in non-DRX for 10MHz + 5MHz

A.8.16.17B.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.17. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.17B.1-1 and A.8.16.17B.1-2 will replace the values of corresponding parameters in Tables A.8.16.17.1-1 and A.8.16.17.1-2.

Table A.8.16.17B.1-1: General test parameters for known SCell activation case, 10+5MHz bandwidth

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement	As specified in section A.3.1.1.1
		Channel R.3 FDD (Cell 1)	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters		Channel R.6 FDD (Cell 1)	
		DL Reference Measurement	
		Channel R.11 FDD (Cell 2)	

Table A.8.16.17B.1-2: Cell specific test parameters for E-UTRAN FDD known SCell activation, 10+5MHz bandwidth

Parameter	Unit	Cell 1						
		T1 T2 T3			T1	T2	Т3	
BW _{channel}	MHz	10			5			
OCNG Patterns								
defined in A.3.2.1.11			P.10 FDD			P.16.FDD		
(OP.11 FDD) and in								
A.3.2.1.16 (OP.16								
FDD)								

A.8.16.17B.2Test Requirements

The test requirements defined in section A.8.16.17.2 shall apply to this test case.

A.8.16.17C E-UTRAN FDD activation and deactivation of known SCell in non-DRX for 5MHz + 5MHz

A.8.16.17C.1Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.17. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.17C.1-1 and A.8.16.17C.1-2 will replace the values of corresponding parameters in Tables A.8.16.17.1-1 and A.8.16.17.1-2.

Table A.8.16.17C.1-1: General test parameters for known SCell activation case, 5+5MHz bandwidth

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.7 FDD (Cell 1)	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.11 FDD	As specified in section A.3.1.2.1

Table A.8.16.17C.1-2: Cell specific test parameters for E-UTRAN FDD known SCell activation, 5+5MHz bandwidth

Parameter	Unit	Cell 1			Cell 2		
		T1 T2 T3		T1	T2	T3	
BW _{channel}	MHz	5			5		
OCNG Patterns							
defined in A.3.2.1.15		C	P.20 FDD		C	P.16.FDD	
(OP.15 FDD) and in							
A.3.2.1.16 (OP.16							
FDD)							

A.8.16.17C.2Test Requirements

The test requirements defined in section A.8.16.17.2 shall apply to this test case.

A.8.16.18 E-UTRAN TDD activation and deactivation of known SCell in non-DRX

A.8.16.18.1 Test Purpose and Environment

The purpose of this test is to verify that the SCell activation and deactivation times are within the requirements stated in section 7.7, when the SCell is known by the UE at the time of activation.

The test parameters are given in Tables A.8.16.18.1-1 and cell-specific parameters in A.8.16.18.1-2 below. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. There are two carriers, each with one cell. Both cells have constant signal levels throughout the test. Before the test starts the UE is connected to Cell 1 (PCell) on radio channel 1 (PCC)

but is not aware of Cell 2 on radio channel 2. The UE is only monitoring the PCC. The UE shall be continuously scheduled in the PCell throughout the whole test.

At the beginning of T1 the UE receives an RRC message by which the SCell (Cell 2) becomes configured on radio channel 2 (SCC). The UE now starts monitoring also the SCC. The test equipment sends a MAC message for activation of the SCell.

The point in time at which the MAC message is received at the UE antenna connector, in a subframe # denoted m, where m is 4 or 9, defines the start of time period T2. The UE shall be able to report valid CSI for the activated SCell at latest in subframe (m+24). The UE shall start reporting CSI in subframe (m+8) and shall report CQI index 0 (out-of-range) until the SCell activation has been completed. Any PCell interruption due to activation of SCell shall occur in the subframes (m+5) to (m+11).

Time period T3 starts when a MAC message for deactivation of SCell, sent from the test equipment to the UE in a subframe # denoted n, is received at the UE antenna connector. The UE shall carry out deactivation of the SCell and any PCell interruption due to the deactivation shall occur in the subframes (n+5) to (n+11).

The test equipment verifies that potential interruption is carried out in the correct time span by monitoring ACK/NACK sent in PCell during activation and deactivation of SCell, respectively.

The test equipment verifies the activation time by counting the subframes from the time when the SCell activation command is sent until a CSI report with other than CQI index 0 is received.

The test equipment verifies the deactivation time by counting the subframes from the time when the SCell deactivation command is sent until CQI reporting for SCell is discontinued.

Table A.8.16.18.1-1: General test parameters for known SCell activation case

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
E-UTRA RF Channel Number		1, 2	Two radio channels are used for this test
Active PCell		Cell 1	Primary cell on RF channel number 1.
Configured deactivated SCell		Cell 2	Configured deactivated secondary cell on RF channel number 2.
Channel Bandwidth (BW _{channel})	MHz	10	Channel bandwidth for cells on primary and secondary component carriers
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2.1 in TS 36.211. The same configuration applies to all cells.
Uplink-downlink configuration		1	
DRX		OFF	Continuous monitoring of primary cell
CQI/PMI periodicity and offset configuration index		0	CQI reporting for SCell every UL subframe
Cell-individual offset for cells on RF channel number 1	dB	0	Individual offset for cells on primary component carrier.
Cell-individual offset for cells on RF channel number 2	dB	0	Individual offset for cells on secondary component carrier.
SCell measurement cycle (measCycleSCell)	ms	320	
Cell2 timing offset to cell1	μs	0	
Time alignment error between cell2 and cell1	μs	≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1.	The value of time alignment error depends upon the type of carrier aggregation.
Cell3 timing offset to cell1	μs	3	Synchronous cells
T1	S	7	During this time the PCell shall be known and the SCell configuredand detected.
T2	S	1	During this time the UE shall activate the SCell.
T3	s	1	During this time the UE shall deactivate the SCell.

This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.18.1-2: Cell specific test parameters for E-UTRAN TDD known SCell activation

Parameter	Unit	Cell 1 T1 T2 T3				Cell 2	
					T1	T2	Т3
E-UTRA RF Channel			1			2	
Number							
BW _{channel}	MHz		10			10	
OCNG Patterns							
defined in A.3.2.2.1		(OP.1 TDD		(OP.2 TDD	
(OP.1 TDD) and in							
A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		0			0	
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
Noc Note 2	dBm/15 kHz		-104			-104	
RSRP Note 3	dBm/15 kHz		-87			-87	
Ê _s /I _{ot}	dB		17			17	
SCH_RP Note 3	dBm/15 kHz		-87			-87	
Ê _s /N _{oc}	dB		17			17	
Propagation Condition				AW	'GN		•
Note 1: OCNG shall b	e used such that	all cells a	re fully allo	cated and	d a constar	nt total trans	smitted

- Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.
- Note 3: Es/lot, RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 4: The uplink resources for CSI reporting are assigned to the UE prior to the start of time period T2.

A.8.16.18.2 Test Requirements

During T2 the UE shall send the first CSI report for SCell in a subframe (m+8), or in a subframe (m+9) if the subframe (m+8) was subject to interruption, or in a subframe (m+13) if the subframes (m+8) and (m+9) were subject to interruption when an intra-band SCell is activated. Whether CSI report in subframe (m+8) and/or (m+9) was interrupted or not is checked by monitoring ACK/NACK sent in PCell in subframe (m+8) and/or (m+9).

During T2 the UE shall start sending CSI reports for SCell with non-zero CQI index at latest in a subframe (m+24).

During T3 the UE shall stop sending CSI reports for SCell at latest in a subframe (m+8).

During T2 interruption of PCell during SCell activation shall not happen outside the subframes (m+5) to (m+11).

During T3 interruption of PCell during SCell deactivation shall not happen outside the subframes (n+5) to (n+11).

The interruption of PCell shall not be more than the values specified for intra-band CA and inter-band CA in Section 7.8.2.

All of the above test requirements shall be fulfilled in order for the observed SCell activation delay and SCell deactivation delay to be counted as correct. The rate of correct observed SCell activation delay and SCell deactivation delay during repeated tests shall be at least 90%.

NOTE: During T2 if there are no uplink resources for reporting the valid CSI in a subframe (m+24) then the UE shall use the next available uplink resource for reporting the corresponding valid CSI.

A.8.16.18A E-UTRAN TDD activation and deactivation of known SCell in non-DRX for 20MHz

A.8.16.18A.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.18. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.18A.1-1 and A.8.16.18A.1-2 will replace the values of corresponding parameters in Tables A.8.16.18.1-1 and A.8.16.18.1-2.

Table A.8.16.18A.1-1: General test parameters for known SCell activation case, 20MHz bandwidth

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2

Table A.8.16.18A.1-2: Cell specific test parameters for E-UTRAN TDD known SCell activation, 20MHz bandwidth

Parameter	Unit		Cell 1			Cell 2		
		T1	T2	Т3	T1	T2	T3	
BW _{channel}	MHz	20			20			
OCNG Patterns								
defined in A.3.2.2.7			OP.7 TDD			OP.2.TDD		
(OP.7 TDD) and in								
À.3.2.2.2 (ÓP.2 TDD)								

A.8.16.18A.2 Test Requirements

The test requirements defined in section A.8.16.18.2 shall apply to this test case.

A.8.16.18B E-UTRAN TDD activation and deactivation of known SCell in non-DRX for 10MHz + 5MHz

A.8.16.18B.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.18. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.18B.1-1 and A.8.16.18B.1-2 will replace the values of corresponding parameters in Tables A.8.16.18.1-1 and A.8.16.18.1-2.

Table A.8.16.18B.1-1: General test parameters for known SCell activation case, 10 + 5MHz bandwidth

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD (cell 1) DL Reference Measurement Channel R.12 TDD (cell 2)	As specified in section A.3.1.2.2

Table A.8.16.18B.1-2: Cell specific test parameters for E-UTRAN TDD known SCell activation, 10 + 5MHz bandwidth

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	T3	T1	T2	T3
BW _{channel}	MHz	10			5		
OCNG Patterns defined in A.3.2.2.1 (OP.1 TDD) and in A.3.2.2.10 (OP.10 TDD)			OP.1 TDD		C	P.10.TDD	

A.8.16.18B.2 Test Requirements

The test requirements defined in section A.8.16.18.2 shall apply to this test case.

A.8.16.18C E-UTRAN TDD activation and deactivation of known SCell in non-DRX for 5MHz + 5MHz

A.8.16.18C.1Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.18. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.18C.1-1 and A.8.16.18C.1-2 will replace the values of corresponding parameters in Tables A.8.16.18.1-1 and A.8.16.18.1-2.

Table A.8.16.18C.1-1: General test parameters for known SCell activation case, 5MHz bandwidth

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.4 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.11 TDD	As specified in section A.3.1.2.2

Table A.8.16.18C.1-2: Cell specific test parameters for E-UTRAN TDD known SCell activation, 5MHz bandwidth

Parameter	Unit		Cell 1			Cell 2			
		T1	T2	T3	T1	T2	T3		
BW _{channel}	MHz		5			5			
OCNG Patterns									
defined in A.3.2.2.9			OP.9 TDD			OP.10.TDD			
(OP.9 TDD) and in			01.0122						
A.3.2.2.10 (OP.10									
TDD)									

A.8.16.18C.2Test Requirements

The test requirements defined in section A.8.16.18.2 shall apply to this test case.

A.8.16.18D E-UTRAN TDD activation and deactivation of known SCell in non-DRX for 20MHz + 10MHz

A.8.16.18D.1Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.18. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.18D.1-1 and A.8.16.18D.1-2 will replace the values of corresponding parameters in Tables A.8.16.18.1-1 and A.8.16.18.1-2.

Table A.8.16.18D.1-1: General test parameters for known SCell activation case, 20 + 10MHz bandwidth

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.3 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.10 TDD (cell 1) DL Reference Measurement Channel R.6 TDD (cell 2)	As specified in section A.3.1.2.2

Table A.8.16.18D.1-2: Cell specific test parameters for E-UTRAN TDD known SCell activation, 10 + 5MHz bandwidth

Parameter	Unit		Cell 1		Cell 2				
		T1	T2	T3	T1	T2	T3		
BW _{channel}	MHz		20			10			
OCNG Patterns									
defined in A.3.2.2.7			OP.7 TDD			OP.2.TDD			
(OP.7 TDD) and in									
À.3.2.2.2 (ÓP.2 TDD)									

A.8.16.18D.2Test Requirements

The test requirements defined in section A.8.16.18.2 shall apply to this test case.

A.8.16.19 E-UTRAN FDD activation and deactivation of unknown SCell in non-DRX

A.8.16.19.1 Test Purpose and Environment

The purpose of this test is to verify that the SCell activation and deactivation times are within the requirements stated in section 7.7, when the SCell is unknown by the UE at the time of activation.

The test parameters are given in Tables A.8.16.19.1-1 and cell-specific parameters in A.8.16.19.1-2 below. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. There are two carriers, each with one cell. Cell 1 has constant signal level throughout the test. Before the test starts the UE is connected to Cell 1 (PCell) on radio channel 1 (PCC) but is not aware of Cell 2 on radio channel 2. The UE is only monitoring the PCC. The UE shall be continuously scheduled in the PCell throughout the whole test.

At the beginning of T1 the UE receives an RRC message by which the SCell (cell2) becomes configured on radio channel 2 (SCC). During T1 the SCell is powered off and UE is not aware of SCell.

A MAC message for activation of SCell is sent by the test equipment 100ms after the RRC message, in a subframe # denoted m which is an even number. The point in time at which the MAC message for activation of SCell is received at the UE antenna connector defines the start of time period T2. Immediately at beginning of T2 the transmission power of cell 2 is increased to same level as for cell 1. The UE shall be able to report valid CSI for the activated SCell at latest in subframe (m+34) provided the SCell can be successfully detected on the first attempt. The UE shall start reporting CSI in subframe (m+8) and shall report CQI index 0 (out-of-range) until the SCell activation has been completed. Any PCell interruption due to activation of SCell shall occur in the subframes (m+5) to (m+9).

Time period T3 starts when a MAC message for deactivation of the SCell, sent from the test equipment to the UE in a subframe # denoted n, is received at the UE antenna connector. The UE shall carry out deactivation of the SCell at latest in subframe (n+8), and any PCell interruption due to the deactivation shall occur in the subframes (n+5) to (n+9).

The test equipment verifies that potential interruption is carried out in the correct time span by monitoring ACK/NACK sent in PCell during activation of SCell, respectively.

The test equipment verifies the activation time by counting the subframes from the time when the SCell activation command is sent until a CSI report with other than CQI index 0 is received.

The test equipment verifies the deactivation time by counting the subframes from the time when the SCell1 deactivation command is sent until CQI reporting for SCell1 is discontinued.

Table A.8.16.19.1-1: General test parameters for unknown SCell activation case

Parameter	Unit	Value	Comment					
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1					
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1					
parameters		Channel R.6 FDD						
E-UTRA RF Channel		1, 2	Two radio channels are used for this test					
Number		·						
Active PCell		Cell 1	Primary cell on RF channel number 1.					
Configured deactivated SCell		Cell 2	Configured deactivated secondary cell on RF channel number 2.					
CP length		Normal						
DRX		OFF	Continuous monitoring of primary cell					
CQI/PMI periodicity and		0	CQI reporting for SCell every second					
offset configuration index		0	subframe					
SCell measurement cycle	ms	320						
(measCycleSCell)	1113	020						
Cell2 timing offset to cell1	μs	0						
Time alignment error	μs	≤ Time alignment error as	The value of time alignment error depends					
between cell2 and cell1		specified in 3GPP TS 36.104 [30]	upon the type of carrier aggregation.					
		clause 6.5.3.1.						
T1			During this time the PCell shall be known					
	ms	100	and the SCell configured, but not					
			dectected.					
T2	S	1	During this time the UE shall activate the					
			SCell.					
T3	S	1	During this time the UE shall deactivate					
		<u> </u>	the SCell.					
	Note: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according							
to the principle defi	nea in se	ction A.3.6.1.						

Table A.8.16.19.1-2: Cell specific test parameters for E-UTRAN FDD unknown SCell activation

Parameter	Unit		Cell 1			Cell 2		
		T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel			1		2			
Number			'					
BW _{channel}	MHz		10			10		
OCNG Patterns								
defined in A.3.2.1.1		(OP.1 FDD		•	OP.2 FDD		
(OP.1 FDD) and in								
A.3.2.1.2 (OP.2 FDD)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB							
PHICH_RB	dB	0 0						
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							

N _{oc} Note 2	dBm/15 kHz	-104		-104		
RSRP Note 3	dBm/15 kHz	-87	-infinity	-87		
Ê _s /I _{ot}	dB	17	-infinity	17		
SCH_RP Note 3	dBm/15 kHz	-87	-infinity	-87		
Ê _s /N _{oc}	dB	17	-infinity	17		
Propagation Condition		AWGN				

- Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
- Note 3: Es/lot, RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 4: The uplink resources for CSI reporting are assigned to the UE prior to the start of time period T2.

A.8.16.19.2 Test Requirements

During T2 the UE shall send the first CSI report for SCell (m+9), or in a subframe (m+10) if the subframe (m+8) was subject to interruption. Whether CSI report in subframe (m+8) was interrupted or not is checked by monitoring ACK/NACK sent in PCell in subframe (m+8).

During T2 the UE shall start sending CSI reports for SCell with non-zero CQI index at latest in a subframe (m+34).

During T3 the UE shall stop sending CSI reports for SCell1 at latest in a subframe (n+8).

During T2 Interruption of PCell during SCell activation shall not happen outside the subframes (m+5) to (m+9).

During T3 Interruption of PCell during SCell1 deactivation shall not happen outside the subframes (n+5) to (n+9).

The interruption of PCell shall not be more than the values specified for intra-band CA and inter-band CA in Section 7.8.2.

All of the above test requirements shall be fulfilled in order for the observed SCell activation delay to be counted as correct. The rate of correct observed SCell activation and deactivation delay during repeated tests shall be at least 90%.

NOTE: During T2 if there are no uplink resources for reporting the valid CSI in a subframe (m+34) then the UE shall use the next available uplink resource for reporting the corresponding valid CSI.

A.8.16.19A E-UTRAN FDD activation and deactivation of unknown SCell in non-DRX for 20MHz

A.8.16.19A.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.19. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.19A.1-1 and A.8.16.19A.1-2 will replace the values of corresponding parameters in Tables A.8.16.19.1-1 and A.8.16.19.1-2.

Table A.8.16.19A.1-1: General test parameters for unknown SCell activation case, 20MHz bandwidth

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement	As specified in section A.3.1.1.1
		Channel R.6 FDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters		Channel R.10 FDD	

Table A.8.16.19A.1-2: Cell specific test parameters for E-UTRAN FDD unknown SCell activation, 20MHz bandwidth

Parameter	Unit	Cell 1			Cell 2		
		T1	T2	Т3	T1	T2	T3
BW _{channel}	MHz		20		20		
OCNG Patterns							
defined in A.3.2.1.17		OP.17 FDD			OP.12.FDD		
(OP.17 FDD) and in							
A.3.2.1.12 (OP.12							
FDD)							

A.8.16.19A.2 Test Requirements

The test requirements defined in section A.8.16.19.2 shall apply to this test case.

A.8.16.19B E-UTRAN FDD activation and deactivation of unknown SCell in non-DRX for 10MHz + 5MHz

A.8.16.19B.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.19. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.19B.1-1 and A.8.16.19B.1-2 will replace the values of corresponding parameters in Tables A.8.16.19.1-1 and A.8.16.19.1-2.

Table A.8.16.19B.1-1: General test parameters for unknown SCell activation case, 10+5MHz bandwidth

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.3 FDD (Cell 1)	As specified in section A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD (Cell 1) DL Reference Measurement Channel R.11 FDD (Cell 2)	As specified in section A.3.1.2.1

Table A.8.16.19B.1-2: Cell specific test parameters for E-UTRAN FDD unknown SCell activation, 10+5MHz bandwidth

Parameter	Unit		Cell 1			Cell 2		
		T1	T2	T3	T1	T2	T3	
BW _{channel}	MHz		10		5			
OCNG Patterns								
defined in A.3.2.1.11		OP.10 FDD			OP.16.FDD			
(OP.11 FDD) and in								
A.3.2.1.16 (OP.16								
FDD)								

A.8.16.19B.2Test Requirements

The test requirements defined in section A.8.16.19.2 shall apply to this test case.

A.8.16.19C E-UTRAN FDD activation and deactivation of unknown SCell in non-DRX for 5MHz + 5MHz

A.8.16.19C.1Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.19. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.19C.1-1 and A.8.16.19C.1-2 will replace the values of corresponding parameters in Tables A.8.16.19.1-1 and A.8.16.19.1-2.

Table A.8.16.19C.1-1: General test parameters for unknown SCell activation case, 5+5MHz bandwidth

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Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement	As specified in section A.3.1.1.1
		Channel R.7 FDD (Cell 1)	•
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section A.3.1.2.1
parameters		Channel R.11 FDD	

Table A.8.16.19C.1-2: Cell specific test parameters for E-UTRAN FDD unknown SCell activation, 5+5MHz bandwidth

Parameter	Unit		Cell 1			Cell 2		
		T1	T2	Т3	T1	T2	T3	
BW _{channel}	MHz	5			5			
OCNG Patterns								
defined in A.3.2.1.15		OP.20 FDD			OP.16.FDD			
(OP.15 FDD) and in								
A.3.2.1.16 (OP.16								
FDD)								

A.8.16.19C.2Test Requirements

The test requirements defined in section A.8.16.19.2 shall apply to this test case.

A.8.16.20 E-UTRAN TDD activation and deactivation of unknown SCell in non-DRX

A.8.16.20.1 Test Purpose and Environment

The purpose of this test is to verify that the SCell activation and deactivation times are within the requirements stated in section 7.7, when the SCell is unknown by the UE at the time of activation.

The test parameters are given in Tables A.8.16.20.1-1 and cell-specific parameters in A.8.16.20.1-2 below. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. There are two carriers, each with one cell. Cell 1 has constant signal level throughout the test. Before the test starts the UE is connected to Cell 1 (PCell) on radio channel 1 (PCC) but is not aware of Cell 2 on radio channel 2. The UE is only monitoring the PCC. The UE shall be continuously scheduled in the PCell throughout the whole test.

At the beginning of T1 the UE receives an RRC message by which the SCell (cell2) becomes configured on radio channel 2 (SCC). During T1 the signal level of SCell is powered off and UE is not aware of SCell.

A MAC message for activation of SCell is sent by the test equipment 100ms after the RRC message, in a subframe # denoted m, where m is 4 or 9. The point in time at which the MAC message for activation of SCell is received at the UE antenna connector defines the start of time period T2. Immediately at beginning of T2 the transmission power of cell 2 is increased to same level as for cell 1. The UE shall be able to report valid CSI for the activated SCell at latest in subframe (m+34) provided the SCell can be successfully detected on the first attempt. The UE shall start reporting CSI in subframe (m+8) and shall report CQI index 0 (out-of-range) until the SCell activation has been completed. Any PCell interruption due to activation of SCell shall occur in the subframes (m+5) to (m+11).

Time period T3 starts when a MAC message for deactivation of the SCell, sent from the test equipment to the UE in a subframe # denoted n, where n is 4 or 9, is received at the UE antenna connector. The UE shall carry out deactivation of the SCell at latest in subframe (n+8), and any PCell interruption due to the deactivation shall occur in the subframes (n+5) to (n+11).

The test equipment verifies that potential interruption is carried out in the correct time span by monitoring ACK/NACK sent in PCell during activation of SCell, respectively.

The test equipment verifies the activation time by counting the subframes from the time when the SCell activation command is sent until a CSI report with other than CQI index 0 is received.

The test equipment verifies the deactivation time by counting the subframes from the time when the SCell1 deactivation command is sent until CQI reporting for SCell1 is discontinued.

Table A.8.16.20.1-1: General test parameters for unknown SCell activation case

	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
E-UTRA RF Channel Number		1, 2	Two radio channels are used for this test
Active PCell		Cell 1	Primary cell on RF channel number 1.
Configured deactivated SCell		Cell 2	Configured deactivated secondary cell on RF channel number 2.
Channel Bandwidth (BW _{channel})	MHz	10	Channel bandwidth for cells on primary and secondary component carriers
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2.1 in TS 36.211. The same configuration applies to all cells.
Uplink-downlink configuration		1	
DRX		OFF	Continuous monitoring of primary cell
CQI/PMI periodicity and offset configuration index		0	CQI reporting for SCell every UL subframe
SCell measurement cycle (measCycleSCell)	ms	320	
Cell2 timing offset to cell1	μs	0	
Time alignment error between cell2 and cell1	μs	≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1.	The value of time alignment error depends upon the type of carrier aggregation.
Cell3 timing offset to cell1	μs	3	Synchronous cells
T1	ms	100	During this time the PCell shall be known and the SCell configured, but not dectected.
T2	S	1	During this time the UE shall activate the SCell.
T3	S	1	During this time the UE shall deactivate

Note: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.20.1-2: Cell specific test parameters for E-UTRAN TDD unknown SCell activation

Parameter	Unit	Cell 1				Cell 2	
		T1 T2 T3		T1	T2	Т3	
E-UTRA RF Channel			1		2		
Number			1				
BW _{channel}	MHz		10			10	
OCNG Patterns							
defined in A.3.2.2.1			OP.1 TDD		(OP.2 TDD	
(OP.1 TDD) and in							
A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB		0			0	
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
Noc Note 2	dBm/15 kHz		-104			-104	
RSRP Note 3	dBm/15 kHz		-87		-infinity	-8	7
Ê _s /I _{ot}	dB		17		-infinity	17	7
SCH_RP Note 3	dBm/15 kHz	-87			-infinity	-8	7
Ê _s /N _{oc}	dB	17			-infinity	17	7
Propagation Condition		AWGN					

- Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.
- Note 3: Es/lot, RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 4: The uplink resources for CSI reporting are assigned to the UE prior to the start of time period T2.

A.8.16.20.2 Test Requirements

During T2 the UE shall send the first CSI report for SCell at in a subframe (m+8)), or in a subframe (m+9) if the subframe (m+8) was subject to interruption, or in a subframe (m+13) if the subframes (m+8) and (m+9) were subject to interruption when an intraband SCell is activated. Whether first CSI report was interrupted or not is checked by monitoring ACK/NACK sent in PCell at the same time as the first CSI report.

During T2 the UE shall start sending CSI reports for SCell with non-zero CQI index at latest in a subframe (m+34).

During T3 the UE shall stop sending CSI reports for SCell1 at latest in a subframe (n+8).

During T2 Interruption of PCell during SCell activation shall not happen outside the subframes (m+5) to (m+11).

During T3 Interruption of PCell during SCell1 deactivation shall not happen outside the subframes (n+5) to (n+11).

The interruption of PCell shall not be more than the values specified for intra-band CA and inter-band CA in Section 7.8.2.

All of the above test requirements shall be fulfilled in order for the observed SCell activation delay to be counted as correct. The rate of correct observed SCell activation and deactivation delay during repeated tests shall be at least 90%.

NOTE: During T2 if there are no uplink resources for reporting the valid CSI in a subframe (m+34) then the UE shall use the next available uplink resource for reporting the corresponding valid CSI.

A.8.16.20A E-UTRAN TDD activation and deactivation of unknown SCell in non-DRX for 20MHz

A.8.16.20A.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.20. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.20A.1-1 and A.8.16.20A.1-2 will replace the values of corresponding parameters in Tables A.8.16.20.1-1 and A.8.16.20.1-2.

Table A.8.16.20A.1-1: General test parameters for unknown SCell activation case, 20MHz bandwidth

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2

Table A.8.16.20A.1-2: Cell specific test parameters for E-UTRAN TDD unknown SCell activation, 20MHz bandwidth

Parameter	Unit		Cell 1		Cell 2			
		T1	T2	Т3	T1	T2	Т3	
BW _{channel}	MHz		20		20			
OCNG Patterns								
defined in A.3.2.2.7			OP.7 TDD		OP.2.TDD			
(OP.7 TDD) and in								
À.3.2.2.2 (ÓP.2 TDD)								

A.8.16.20A.2 Test Requirements

The test requirements defined in section A.8.16.20.2 shall apply to this test case.

A.8.16.20B E-UTRAN TDD activation and deactivation of unknown SCell in non-DRX for 10MHz + 5MHz

A.8.16.20B.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.20. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.20B.1-1 and A.8.16.20B.1-2 will replace the values of corresponding parameters in Tables A.8.16.20.1-1 and A.8.16.20.1-2.

Table A.8.16.20B.1-1: General test parameters for unknown SCell activation case, 10 + 5MHz bandwidth

Parameter	Unit	Value	Comment
PDSCH parameters DL Reference Measurem		DL Reference Measurement	As appointed in acction A 2.1.1.2
		Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH		DL Reference Measurement	
parameters		Channel R.6 TDD (cell 1)	As specified in section A.3.1.2.2
		DL Reference Measurement	As specified in section A.s. r.z.z
		Channel R.12 TDD (cell 2)	

Table A.8.16.20B.1-2: Cell specific test parameters for E-UTRAN TDD unknown SCell activation, 10 + 5MHz bandwidth

Parameter	Unit		Cell 1		Cell 2			
		T1	T2	T3	T1	T2	T3	
BW _{channel}	MHz		10		5			
OCNG Patterns								
defined in A.3.2.2.1		OP.1 TDD			OP.10.TDD			
(OP.1 TDD) and in								
A.3.2.2.10 (OP.10								
TDD)								

A.8.16.20B.2 Test Requirements

The test requirements defined in section A.8.16.20.2 shall apply to this test case.

A.8.16.20C E-UTRAN TDD activation and deactivation of unknown SCell in non-DRX for 5MHz + 5MHz

A.8.16.20C.1Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.20. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.20C.1-1 and A.8.16.20C.1-2 will replace the values of corresponding parameters in Tables A.8.16.20.1-1 and A.8.16.20.1-2.

Table A.8.16.20C.1-1: General test parameters for unknown SCell activation case, 5MHz bandwidth

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.4 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.11 TDD	As specified in section A.3.1.2.2

Table A.8.16.20C.1-2: Cell specific test parameters for E-UTRAN TDD unknown SCell activation, 5MHz bandwidth

Parameter	Unit		Cell 1	Cell 2				
		T1	T2	Т3	T1	T2	T3	
BW _{channel}	MHz		5		5			
OCNG Patterns defined in A.3.2.2.9			OP.9 TDD		OP.10.TDD			
(OP.9 TDD) and in A.3.2.2.10 (OP.10		01.10.155						
TDD)								

A.8.16.20C.2Test Requirements

The test requirements defined in section A.8.16.20.2 shall apply to this test case.

A.8.16.20D E-UTRAN TDD activation and deactivation of unknown SCell in non-DRX for 20MHz + 10MHz

A.8.16.20D.1Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.20. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.20D.1-1 and A.8.16.20D.1-2 will replace the values of corresponding parameters in Tables A.8.16.20.1-1 and A.8.16.20.1-2.

Table A.8.16.20D.1-1: General test parameters for unknown SCell activation case, 20 + 10MHz bandwidth

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.3 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.10 TDD (cell 1) DL Reference Measurement Channel R.6 TDD (cell 2)	As specified in section A.3.1.2.2

Table A.8.16.20D.1-2: Cell specific test parameters for E-UTRAN TDD unknown SCell activation, 10 + 5MHz bandwidth

Parameter	Unit		Cell 1		Cell 2			
		T1	T2	T3	T1	T2	T3	
BW _{channel}	MHz		20		10			
OCNG Patterns								
defined in A.3.2.2.7			OP.7 TDD		OP.2.TDD			
(OP.7 TDD) and in								
À.3.2.2.2 (ÓP.2 TDD)								

A.8.16.20D.2Test Requirements

The test requirements defined in section A.8.16.20.2 shall apply to this test case.

A.8.16.21 E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX for 20MHz+10MHz

A.8.16.21.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.2. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.21.1-1 and A.8.16.21.1-2 will replace the values of corresponding parameters in Tables A.8.16.2.1-1 and A.8.16.2.1-2.

Table A.8.16.21.1-1: E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX for 20MHz+10MHz

	Parameter	Unit	Value	Comment
	nel bandwidth for cells imary carrier (BW _{channel})	MHz	20	Channel bandwidth for cells on primary component carrier
	CH parameters for cells imary carriers		DL Reference Measurement Channel R.3 TDD	As specified in section A.3.1.1.2
parar	CH/PDCCH/PHICH neters for cells on arriers		DL Reference Measurement Channel R.10 TDD	As specified in section A.3.1.2.2
on se	Channel bandwidth for cells on secondary carriers (BW _{channel})		10	Channel bandwidth for cells on secondary component carrier
	PDSCH parameters for cells on secondary carrier		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
parar	PCFICH/PDCCH/PHICH parameters for cells on secondary carrier		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
	Hysteresis	dB	0	Hysteresis for evaluation of event A2.
A2	Threshold RSRP	dBm	-96	Actual RSRP threshold for event A2. Needs to take absolute accuracy tolerance in clause 9.1.11.1 into account plus margin.
	Time To Trigger	S	0	

Note 1: See Table A.8.16.2.1-1 for other general test parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.21.1-2: Cell specific test parameters for E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX for 20MHz+10MHz

Parameter	Unit		Cell 1			Cell 2			Cell 3	
		T1	T2	T3	T1	T2	T3	T1	T2	T3
BW _{channel}	MHz		20			10		10		
OCNG Patterns										
defined in A.3.2.2.7			OP.7 TDD		(OP.2 TDD		OP.2 TDD		
(OP.7 TDD) and in										
A.3.2.2.2 (OP.2 TDD)										
N _{oc} Note 2	dBm/15 kHz		-104				-10)4		
RSRP Note 3	dBm/15 kHz	-85	-85	-107	-85	-85	-107	-infinity	-85	-107
Ê _s /I _{ot}	dB	19	19	-3	19.00	-0.05	-4.76	-infinity	-0.05	-4.76
SCH_RP Note 3	dBm/15 kHz	-85	-85	-107	-85	-85	-107	-infinity	-85	-107
Ê _s /N _{oc}	dB	19	19	-3	19	19	-3	-infinity	19	-3
Note: See Table A.8	3.16.2.1-2 for oth	er cell-spe	cific test pa	arameters	3.					

A.8.16.21.2 Test Requirements

The test requirements defined in section A.8.16.2.2 shall apply to this test case.

A.8.16.22 E-UTRAN TDD event triggered reporting on deactivating SCell with PCell interruption in non-DRX for 20MHz+10MHz

A.8.16.22.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.16.4. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.16.22.1-1 and A.8.16.22.1-2 will replace the values of corresponding parameters in Tables A.8.16.4.1-1 and A.8.16.4.1-2.

Table A.8.16.22.1-1: General test parameters for E-UTRAN TDD event triggered reporting on deactivating SCell with PCell interruption in non-DRX for 20MHz+10MHz

Parameter	Unit	Value	Comment
Channel bandwidth for cells on primary carrier (BW _{channel})	MHz	20	Channel bandwidth for cells on primary component carrier
PDSCH parameters for cells on primary carriers		DL Reference Measurement Channel R.3 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters for cells on primary carriers		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2
Channel bandwidth for cells on secondary carriers (BW _{channel})	MHz	10	Channel bandwidth for cells on secondary component carrier
PDSCH parameters for cells on secondary carrier		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters for cells on secondary carrier		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2

Note 1: See Table A.8.16.4.1-1 for other general test parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.22.1-2: Cell specific test parameters for E-UTRAN TDD event triggered reporting on deactivating SCell with PCell interruption in non-DRX for 20MHz+10MHz

Parameter	Unit	Cell 1		С	Cell 2		Cell 3	
		T1	T2	T1	T2	T1	T2	
BW _{channel}	MHz	20		10		10		
OCNG Patterns defined in A.3.2.2		OP.	7 TDD	OP.	2 TDD	OP.2	TDD	
Note: See Table A.8.1	6.4.1-2 for oth	er cell-sp	ecific test p	arameter	S.			

A.8.16.22.2 Test Requirements

The test requirements defined in section A.8.16.4.2 shall apply to this test case.

A.8.16.23 E-UTRAN TDD-FDD CA Event Triggered Reporting Under Deactivated SCell in Non-DRX with PCell in FDD

A.8.16.23.1 Test Purpose and Environment

The purpose of this test is to verify that in TDD-FDD CA with PCell in FDD the UE correctly detects events A2 (Serving cell becomes worse than threshold) and A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] within the requirements for SCell stated in clause 8.3.3.2.1 and the requirements for PCell stated in clause 8.3.2.

In this test case there are 3 cells: Cell 1, Cell 2 and Cell 3. Cell 1 is the PCell on the FDD primary component carrier, Cell 2 is the configured and deactivated SCell on the TDD secondary component carrier, and Cell 3 is the neighbor cell on the TDD secondary component carrier. It is indicated to the UE in the measurement control information that event-triggered reporting with Events A2 (PCell and SCell) and A6 is used. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. During T1 the UE shall not have any information on cell 3. Immediately at beginning of T2 the transmission power of cell 3 is increased to same level as for cell 2, and due to usage of an offset this shall result in reporting of Event A6. At the beginning of T3 the transmission powers of cells 1, 2 and 3 are reduced below a threshold value and this shall result in reporting of Event A2 for PCell and SCell, respectively.

The test parameters are given in Table A.8.16.23.1-1 and A.8.16.23.1-2 below.

Table A.8.16.23.1-1: General test parameters for E-UTRAN TDD-FDD CA event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions with PCell in FDD

	Parameter	Unit	Value	Comment			
E-UT	RA RF Channel		1, 2	Two radio channels are used for this test			
Num	ber		•				
	e PCell		Cell 1	Primary cell on RF channel number 1.			
Conf	igured deactivated		Cell 2	Configured deactivated secondary cell on			
SCel			Cell 2	RF channel number 2.			
Neigl	hbour cell		Cell 3	Neighbor cell to be identified on RF			
			Cell 3	channel number 2.			
	ength		Normal				
	cial subframe		6	As specified in table 4.2-1 in TS 36.211.			
	guration			The same configuration in TDD cells			
	k-downlink		1	As specified in table 4.2-2 in TS 36.211.			
	guration		•	The same configuration in TDD cells			
DRX			OFF	Continuous monitoring of primary cell			
A2	Hysteresis	dB	0	Hysteresis for evaluation of event A2.			
	Threshold RSRP	dBm		Actual RSRP threshold for event A2.			
			-98	Needs to take absolute accuracy tolerance			
			00	in clause 9.1.11.1 into account plus			
				margin.			
	Time To Trigger	S	0				
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.			
	Offset	dB		Offset parameter for evaluation of event			
			-6	A6. Needs to take relative accuracy			
				tolerance in clause 9.1.11.2 into account			
				plus margin.			
	Report on leave		False				
	Time To Trigger	S	0				
	individual offset for cells	dB	0	Individual offset for cells on primary			
	F channel number 1			component carrier.			
	individual offset for cells	dB	0	Individual offset for cells on secondary			
_	F channel number 2			component carrier.			
	coefficient		0	L3 filtering is not used			
	I measurement cycle	ms	320				
	sCycleSCell)		320				
T1		S	5	During this time the UE shall be aware of			
			J	cells 1 and 2 but not cell 3.			
T2		S	≤12	UE shall report Event A6 within 6.4s			
			212	(20xscellMeasCycle)			
Т3		S	5	UE shall report Event A2 within 200 ms			
		1	3	and 1.6s for cells 1 and 2, respectively.			

Table A.8.16.23.1-2: Cell specific test parameters for E-UTRAN TDD-FDD CA event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions with PCell in FDD

Parameter	Unit		Cell 1			Cell 2			Cell 3		
		T1	T2	T3	T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel Number			1				2				
BW _{channel}		5M	1Hz: N _{RB,c} =	25			5MHz: N _{RE}				
			ИHz: N _{RB,c} =				10MHz: N _R				
DD 0 0 1 1			1Hz: N _{RB,c} =		20MHz: N _{RB,c} = 100						
PDSCH			MHz: R.5 F[
parameters: DL Reference			MHz: R.0 F MHz: R.4 F		_				_		
Measurement		201	IVII 12. TX. T T		_				_		
Channel											
PCFICH/PDCCH/		5M	1Hz: R.11 F	DD	5N	/lHz: R.11 T	DD	5MH	z: R.11 T	DD	
PHICH		10	MHz: R.6 F	DD	10	MHz: R.6 T	DD	10M	Hz: R.6 T	DD	
parameters:		201	ИHz: R.10 F	DD	201	MHz: R.10 T	TDD	20MF	dz: R.10	ΓDD	
DL Reference											
Measurement											
Channel		C N 41	I OD 45 F	-00	5MHz: OP.10 TDD 5MHz: OP.10 TD						
OCNG Patterns defined			Hz: OP.15 F //Hz: OP.1 F					5MHz: OP.10 TDD 10MHz: OP.2 TDD			
delined					10MHz: OP.2 TDD				12. OP.2 1z: OP.8		
PBCH RA	dB	20101	20MHz: OP.11 FDD 20MHz: OP.8 TDD						12. 01 .0	וטט	
PBCH_RB	dB										
PSS_RA	dB										
SSS_RA	dB										
PCFICH_RB	dB										
PHICH_RA	dB										
PHICH_RB	dB		0			0			0		
PDCCH_RA	dB										
PDCCH_RB	dB										
PDSCH_RA	dB										
PDSCH_RB	dB										
OCNG_RA ^{Note 1} OCNG_RB ^{Note 1}	dB										
N _{oc} ^{Note 2}	dB dBm/15		-104				-104	1			
IN _{OC}	kHz		-104				-102	ł			
Ê _s /N _{oc}	dB	17	17	-3	17	17	-3	-infinity	17	-3	
Ês/Int	dB	17	17	-3	17	-0.09	-4.76	-infinity	-0.09	-4.76	
RSRP Note 3	dBm/15 kHz	-87	-87	-107	-87	-87	-107	-infinity	-87	-107	
SCH_RP Note 3	dBm/15 kHz	-87	-87	-107	-87	-87	-107	-infinity	-87	-107	
lo Note 3	dBm/Ch	-59.13	-59.13	-74.45	-59.17	-56.13	-73.20		l .	I	
	BW	+10log	+10log	+10log	+10log	+10log	+10log	Specifie	d in colur	nns for	
		(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	· ·	Cell 2		
		/50)	/50)	/50)	/50)	/50)	/50)				
Propagation Condition			AWGN			ETU70			ETU70		
Correlation Matrix			1x2 Low	ow 1x2 Low 1x2 Low							
and Antenna											
Configuration											
Timing offset to Cell 1	μs		-		0			3			
Time alignment error relative to	μs		-			≤ TAE			N/A		
cell 1 Note 5								l power spe			

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.

Note 3: Es/lot, RSRP, SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.16.23.2 Test Requirements

The UE shall send one Event A6 triggered measurement report for cell 3 with a measurement reporting delay of less than 6.4s (20×measCycleSCell) from the beginning of time T2.

The UE shall send one Event A2 triggered measurement report for Cell 1 with a measurement reporting delay of less than 200 ms from beginning of time T3.

The UE shall send one Event A2 triggered measurement report for Cell 2 with a measurement reporting delay of less than 1.6s ($5 \times$ measCycleSCell) from beginning of time T3.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90% for each of the events.

NOTE: The actual overall delays measured in the tests may be up to 2×TTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.16.24 E-UTRAN TDD-FDD CA Event Triggered Reporting Under Deactivated SCell in Non-DRX with PCell in TDD

A.8.16.24.1 Test Purpose and Environment

The purpose of this test is to verify that in TDD-FDD CA with PCell in TDD the UE correctly detects events A2 (Serving cell becomes worse than threshold) and A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] within the requirements for SCell stated in clause 8.3.3.2.1 and the requirements for PCell stated in clause 8.3.2.

In this test case there are 3 cells: Cell 1, Cell 2 and Cell 3. Cell 1 is the PCell on the TDD primary component carrier, Cell 2 is the configured and deactivated SCell on the FDD secondary component carrier, and Cell 3 is the neighbor cell on the FDD secondary component carrier. It is indicated to the UE in the measurement control information that event-triggered reporting with Events A2 (PCell and SCell) and A6 is used. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. During T1 the UE shall not have any information on cell 3. Immediately at beginning of T2 the transmission power of cell 3 is increased to same level as for cell 2, and due to usage of an offset this shall result in reporting of Event A6. At the beginning of T3 the transmission powers of cells 1, 2 and 3 are reduced below a threshold value and this shall result in reporting of Event A2 for PCell and SCell, respectively.

The test parameters are given in Table A.8.16.24.1-1 and Table A.8.16.24.1-2.

Table A.8.16.24.1-1: General test parameters for E-UTRAN TDD-FDD CA event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions with PCell in TDD

	Parameter	Unit	Value	Comment
E-UT	RA RF Channel		1, 2	Two radio channels are used for this test
Numl	ber			
	e PCell		Cell 1	Primary cell on RF channel number 1.
Conf	igured deactivated		Cell 2	Configured deactivated secondary cell on
SCel			Cell 2	RF channel number 2.
Neigl	hbour cell		Cell 3	Neighbor cell to be identified on RF
			Cell 5	channel number 2.
CP le			Normal	
	cial subframe		6	As specified in table 4.2-1 in TS 36.211.
	guration		<u> </u>	
	k-downlink		1	As specified in table 4.2-2 in TS 36.211.
	guration		-	
DRX			OFF	Continuous monitoring of primary cell
A2	Hysteresis	dB	0	Hysteresis for evaluation of event A2.
	Threshold RSRP	dBm		Actual RSRP threshold for event A2.
			-98	Needs to take absolute accuracy tolerance
			-30	in clause 9.1.11.1 into account plus
				margin.
	Time To Trigger	S	0	
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.
	Offset	dB		Offset parameter for evaluation of event
			-6	A6. Needs to take relative accuracy
			-0	tolerance in clause 9.1.11.2 into account
				plus margin.
	Report on leave		False	
	Time To Trigger	S	0	
Cell-i	individual offset for cells	dB	0	Individual offset for cells on primary
on R	F channel number 1		U	component carrier.
Cell-i	individual offset for cells	dB	0	Individual offset for cells on secondary
on R	F channel number 2		U	component carrier.
Filter	coefficient		0	L3 filtering is not used
SCel	I measurement cycle	ms	220	
	sCycleSCell)		320	
T1	•	S	-	During this time the UE shall be aware of
			5	cells 1 and 2 but not cell 3.
T2		s	-140	UE shall report Event A6 within 6.4s
			≤12	(20×scellMeasCycle)
T3		s	5	UE shall report Event A2 within 200 ms
10			E	

Table A.8.16.24.1-2: Cell specific test parameters for E-UTRAN TDD-FDD CA event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions with PCell in TDD

Parameter	Unit		Cell 1			Cell 2		Cell 3			
		T1	T2	Т3	T1	T2	Т3	T1	T2	T3	
E-UTRA RF Channel Number			1				2				
BW _{channel}			1Hz: N _{RB,c} = ИHz: N _{RB,c} =				5MHz: N _R 10MHz: N _R				
		20N	1Hz: N _{RB,c} =	100	$20MHz: N_{RB,c} = 100$						
PDSCH		51	ЛHz: R.4 TI	DD							
parameters:			MHz: R.0 T								
DL Reference		20	MHz: R.3 T	DD	-				-		
Measurement											
Channel			5			5 5			5 =	-	
PCFICH/PDCCH/			1Hz: R.11 T			1Hz: R.11 F			z: R.11 F		
PHICH			MHz: R.6 T			МНz: R.6 F ИНz: R.10 F			Hz: R.6 F Iz: R.10 F		
parameters: DL Reference		201	20MHz: R.10 TDD			VIII 2. K. 10 F	-טט	ZUIVIF	12. K. IU F	-טט	
Measurement											
Channel											
OCNG Patterns		5M	IHz: OP.9 T	DD	5M	Hz: OP.16 F	-DD	5MHz	z: OP.16 l	-DD	
defined			лнz: ОР.1 Т			лг. От 1.0 г ИНz: ОР.2 F			lz: OP.2 l		
			/IHz: OP.7 1			1Hz: OP.12			z: OP.12		
PBCH_RA	dB		-		-			-	-		
PBCH_RB	dB										
PSS_RA	dB										
SSS_RA	dB										
PCFICH_RB	dB										
PHICH_RA	dB										
PHICH_RB	dB		0			0			0		
PDCCH_RA	dB										
PDCCH_RB	dB										
PDSCH_RA	dB										
PDSCH_RB	dB										
OCNG_RA ^{Note 1}	dB										
OCNG_RB ^{Note 1}	dB										
Noc Note 2	dBm/15 kHz		-104				-104	1			
Ê _s /N _{oc}	dB	17	17	-3	17	17	-3	-infinity	17	-3	
Ê _s /I _{ot}	dB	17	17	-3	17	-0.09	-4.76	-infinity	-0.09	-4.76	
RSRP Note 3	dBm/15 kHz	-87	-87	-107	-87	-87	-107	-infinity	-87	-107	
SCH_RP Note 3	dBm/15 kHz	-87	-87	-107	-87	-87	-107	-infinity	-87	-107	
lo Note 3	dBm/Ch	-59.13	-59.13	-74.45	-59.17	-56.13	-73.20			•	
	BW	+10log	+10log	+10log	+10log	+10log	+10log	Specifie	d in colur	nns for	
		(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}		Cell 2		
		/50)	/50)	/50)	/50)	/50)	/50)				
Propagation Condition			AWGN			ETU70			ETU70		
Correlation Matrix			1x2 Low			1x2 Low			1x2 Low		
and Antenna											
Configuration											
Timing offset to Cell 1	μs		-		0			3			
Time alignment	μs	- ≤ TAE N/A									
error relative to											
cell 1 Note 5											
Note 1: OCNG s	hall be used	d such that	all cells are	fully allocat	ted and a co	onstant total	transmitted	nower spe	ctral dens	sity is	

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.

Note 3: Es/lot, RSRP, SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.16.24.2 Test Requirements

The UE shall send one Event A6 triggered measurement report for cell3 with a measurement reporting delay of less than 6.4s ($20 \times$ measCycleSCell) from the beginning of time T2.

The UE shall send one Event A2 triggered measurement report for Cell 1 with a measurement reporting delay of less than 200 ms from beginning of time T3.

The UE shall send one Event A2 triggered measurement report for Cell 2 with a measurement reporting delay of less than 1.6s ($5 \times$ measCycleSCell) from beginning of time T3.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90% for each of the events.

NOTE: The actual overall delays measured in the tests may be up to $2 \times TTIDCCH$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.16.25 E-UTRAN TDD-FDD CA Event triggered reporting on deactivated SCell with PCell interruption in non-DRX with PCell in FDD

A.8.16.25.1 Test Purpose and Environment

The purpose of this test is to verify that in TDD-FDD CA with PCell in FDD the UE correctly detects event A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] within the requirements stated in clause 8.3.3.2.1 and the requirements for PCell stated in clause 8.3.2 while at the same time fulfilling the requirement on interruption rate.

In this test case there are three cells: Cell1, Cell2 and Cell3. Cell 1 is the PCell on the FDD primary component carrier, Cell 2 is the configured and deactivated SCell on the TDD secondary component carrier, and Cell 3 is the neighbor cell on the TDD secondary component carrier. It is indicated to the UE in the measurement control information that event-triggered reporting with Event A6 is used. The test consists of two successive time periods, with duration of T1 and T2, respectively. During T1 the UE shall not have any information of cell 3. Immediately at beginning of T2 the transmission power of cell 3 is increased to same level as for cell 2, and due to usage of an offset this shall result in reporting of Event A6. PDCCH indicating a new transmission on the PCell shall be sent continuously to ensure that the UE sends ACK/NACKs throughout the test.

The test parameters are given in Table A.8.16.25.1-1 and Table A.8.16.25.1-2 below.

Table A.8.16.25.1-1: General test parameters for E-UTRAN TDD-FDD CA Event triggered reporting on configured but deactivated SCell with PCell interruption in non-DRX with PCell in FDD

	Parameter	Unit	Value	Comment
E-UT Numl	RA RF Channel ber		1, 2	Two radio channels are used for this test
Activ	e PCell		Cell 1	Primary cell on RF channel number 1.
SCel			Cell 2	Configured deactivated secondary cell on RF channel number 2.
Neigl	nbour cell		Cell 3	Neighbor cell to be identified on RF channel number 2.
CP le	ength		Normal	
	ial subframe guration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in TDD cells
	k-downlink guration		1	As specified in table 4.2-2 in TS 36.211. The same configuration in TDD cells
DRX			OFF	Continuous monitoring of primary cell
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.
	Offset	dB	-3	Offset parameter for evaluation of event A6. Needs to take relative accuracy tolerance in clause 9.1.11.2 into account plus margin.
	Report on leave		False	
	Time To Trigger	S	0	
	ndividual offset for cells F channel number 1	dB	0	Individual offset for cells on primary component carrier.
	ndividual offset for cells F channel number 2	dB	0	Individual offset for cells on secondary component carrier.
Filter	coefficient		0	L3 filtering is not used
	I measurement cycle sCycleSCell)	ms	1280	
Ť1		S	5	During this time the UE shall be aware of cells 1 and 2 but not cell 3.
T2		s	≤30	UE shall report Event A6 within 25.6s (20xscellMeasCycle)

Table A.8.16.25.1-2: Cell specific test parameters for E-UTRAN TDD-FDD CA Event triggered reporting on configured but deactivated SCell with PCell interruption in non-DRX with PCell in FDD

Parameter	Unit	Се	II 1	Ce	ell 2	Cell 3			
		T1	T2	T1	T2	T1	T2		
E-UTRA RF Channel Number			1		2				
BW _{channel}		10MHz: N	$I_{RB,c} = 25$ $I_{RB,c} = 50$ $I_{RB,c} = 100$		$5MHz: N_{RB,c} = 25$ $10MHz: N_{RB,c} = 50$ $20MHz: N_{RB,c} = 100$				
PDSCH parameters: DL Reference Measurement Channel		5MHz: F 10MHz:	R.5 FDD R.0 FDD R.4 FDD	-		-	-		
PCFICH/PDCCH/ PHICH parameters: DL Reference Measurement Channel		5MHz: R.11 FDD 10MHz: R.6 FDD 20MHz: R.10 FDD		10MHz:	R.11 TDD R.6 TDD R.10 TDD	5MHz: R.11 TDD 10MHz: R.6 TDD 20MHz: R.10 TDD			
OCNG Patterns defined		10MHz: C	P.20 FDD P.10 FDD P.17 FDD	10MHz: (P.10 TDD OP.2 TDD OP.8 TDD	5MHz: OP.10 TDD 10MHz: OP.2 TDD 20MHz: OP.8 TDD			
PBCH_RA	dB								
PBCH_RB	dB								
PSS_RA	dB								
SSS_RA	dB])		0	0			
PCFICH_RB	dB]	,	U					
PHICH_RA	dB								
PHICH_RB	dB								
PDCCH_RA	dB								

PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG RB ^{Note 1}	dB							
N _{oc} Note 2	dBm/15	-1	01		-101			
	kHz							
Ê _s /N _{oc}	dB	16	16	16	16	-infinity	16	
Ê _s /I _{ot}	dB	16	16	16	-0.11	-infinity	-0.11	
RSRP Note 3	dBm/15 kHz	-85	-85	-85	-85	-infinity	-85	
SCH_RP Note 3	dBm/15 kHz	-85	-85	-85	-85	-infinity	-85	
lo Note 3	dBm/Ch BW	-57.11 +10log (N _{RB,c} /50)	-57.11 +10log (N _{RB,c} /50)	-57.11 +10log (N _{RB,c} /50)	-54.15 +10log (N _{RB,c} /50)	Specified in Ce		
Propagation Condition			'GN		GN	AWGN		
Correlation Matrix and Antenna Configuration		1x2 Low		1x2 Low		1x2 Low		
Timing offset to Cell 1	μs	-		0		3		
Time alignment error relative to cell 1 Note 5	μs		-	≤T	AE	N/A		

- Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.
- Note 3: Es/lot, RSRP, SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 4: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.
- Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

A.8.16.25.2 Test Requirements

The UE shall send one Event A6 triggered measurement report for cell 3, with a measurement reporting delay less than 25.6s from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The UE shall be scheduled on PCell continuously throughout the test. From the start of T1 until the measurement report is received during T2, at least 99.5% of all expected ACK/NACKs shall be transmitted by the UE.

For a test to be considered successful requirements on both event detection and percentage of transmitted ACK/NACKs have to be fulfilled simultaneously.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.16.26 E-UTRAN TDD-FDD CA Event triggered reporting on deactivated SCell with PCell interruption in non-DRX with PCell in TDD

A.8.16.26.1 Test Purpose and Environment

The purpose of this test is to verify that in TDD-FDD CA with PCell in TDD the UE correctly detects event A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] within the requirements stated in clause 8.3.3.2.1 and the requirements for PCell stated in clause 8.3.2 while at the same time fulfilling the requirement on interruption rate.

In this test case there are three cells: Cell1, Cell2 and Cell3. Cell 1 is the PCell on the TDD primary component carrier, Cell 2 is the configured and deactivated SCell on the FDD secondary component carrier, and Cell 3 is the neighbor cell on the FDD

secondary component carrier. It is indicated to the UE in the measurement control information that event-triggered reporting with Event A6 is used. The test consists of two successive time periods, with duration of T1 and T2, respectively. During T1 the UE shall not have any information of cell 3. Immediately at beginning of T2 the transmission power of cell 3 is increased to same level as for cell 2, and due to usage of an offset this shall result in reporting of Event A6. PDCCH indicating a new transmission on the PCell shall be sent continuously to ensure that the UE sends ACK/NACKs throughout the test.

The test parameters are given in Table A.8.16.26.1-1 and Table A.8.16.26.1-1 below.

Table A.8.16.26.1-1: General test parameters for E-UTRAN TDD-FDD CA Event triggered reporting on configured but deactivated SCell with PCell interruption in non-DRX with PCell in TDD

	Parameter	Unit	Value	Comment
E-UT	RA RF Channel		1, 2	Two radio channels are used for this test
Num	ber			
Activ	e PCell		Cell 1	Primary cell on RF channel number 1.
SCel	Configured deactivated SCell		Cell 2	Configured deactivated secondary cell on RF channel number 2.
Neigl	Neighbour cell		Cell 3	Neighbor cell to be identified on RF channel number 2.
CP le	ength		Normal	
	ial subframe guration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in TDD cells
Uplin	k-downlink guration		1	As specified in table 4.2-2 in TS 36.211. The same configuration in TDD cells
DRX			OFF	Continuous monitoring of primary cell
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.
	Offset	dB	-3	Offset parameter for evaluation of event A6. Needs to take relative accuracy tolerance in clause 9.1.11.2 into account plus margin.
	Report on leave		False	
	Time To Trigger	S	0	
	individual offset for cells F channel number 1	dB	0	Individual offset for cells on primary component carrier.
	ndividual offset for cells F channel number 2	dB	0	Individual offset for cells on secondary component carrier.
Filter	coefficient		0	L3 filtering is not used
	I measurement cycle sCycleSCell)	ms	1280	<u> </u>
T1		S	5	During this time the UE shall be aware of cells 1 and 2 but not cell 3.
T2		S	≤30	UE shall report Event A6 within 25.6s (20xscellMeasCycle)

Table A.8.16.26.1-2: Cell specific test parameters for E-UTRAN TDD-FDD CA Event triggered reporting on configured but deactivated SCell with PCell interruption in non-DRX with PCell in TDD

Parameter	Unit	Ce	II 1	Ce	ell 2	Cell 3			
		T1	T2	T1	T2	T1	T2		
E-UTRA RF Channel Number			1		2				
BW _{channel}		10MHz: N	$R_{RB,c} = 25$ $R_{RB,c} = 50$ $R_{RB,c} = 100$		$5MHz: N_{RB,c} = 25$ $10MHz: N_{RB,c} = 50$ $20MHz: N_{RB,c} = 100$				
PDSCH parameters: DL Reference Measurement Channel		5MHz: F 10MHz:	R.4 TDD R.0 TDD R.3 TDD		-	-			
PCFICH/PDCCH/ PHICH parameters: DL Reference Measurement Channel		10MHz:	5MHz: R.11 TDD 10MHz: R.6 TDD 20MHz: R.10 TDD		R.11 FDD R.6 FDD R.10 FDD	5MHz: R.11 FDD 10MHz: R.6 FDD 20MHz: R.10 FDD			
OCNG Patterns defined		10MHz: 0	P.9 TDD)P.1 TDD)P.7 TDD	10MHz: 0	P.16 FDD OP.2 FDD OP.12 FDD	5MHz: OP.16 FDD 10MHz: OP.2 FDD 20MHz: OP.12 FDD			
PBCH_RA	dB								
PBCH_RB	dB]							
PSS_RA	dB]							
SSS_RA	dB	0			0	0			
PCFICH_RB	dB		,	U					
PHICH_RA	dB								
PHICH_RB	dB]							
PDCCH_RA	dB								

PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG RB ^{Note 1}	dB						
Noc Note 2	dBm/15 kHz	-1	01		-101		
Ê _s /N _{oc}	dB	16	16	16	16	-infinity	16
Ê _s /I _{ot}	dB	16	16	16	-0.11	-infinity	-0.11
RSRP Note 3	dBm/15 kHz	-85	-85	-85	-85	-infinity	-85
SCH_RP Note 3	dBm/15 kHz	-85	-85	-85	-85	-infinity	-85
lo Note 3	dBm/Ch BW	-57.11 +10log (N _{RB,c} /50)	-57.11 +10log (N _{RB,c} /50)	-57.11 +10log (N _{RB,c} /50)	-54.15 +10log (N _{RB,c} /50)	Specified in Cel	
Propagation Condition		AW		AW		AWGN	
Correlation Matrix and Antenna Configuration		1x2 Low		1x2 Low		1x2 Low	
Timing offset to Cell 1	μs	-		(0	3	
Time alignment error relative to cell 1 Note 5	μs		•	≤ TAE		N/	A

- Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.
- Note 3: Es/lot, RSRP, SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 4: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.
- Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

A.8.16.26.2 Test Requirements

The UE shall send one Event A6 triggered measurement report for cell 3, with a measurement reporting delay less than 25.6s from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The UE shall be scheduled on PCell continuously throughout the test. From the start of T1 until the measurement report is received during T2, at least 99.5% of all expected ACK/NACKs shall be transmitted by the UE.

For a test to be considered successful requirements on both event detection and percentage of transmitted ACK/NACKs have to be fulfilled simultaneously.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.A.8.16.27 3 DL PCell in FDD CA Event Triggered Reporting with 2 Deactivated SCells in Non-DRX

A.8.16.27.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects events A1 (Serving cell becomes better than threshold), A2 (Serving cell becomes worse than threshold) and A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] within the requirements stated in clause 8.3.3.2.1.

The test parameters are given in Tables A.8.16.27.1-1 and A.8.16.27.1-2 below. It is indicated to the UE in the measurement control information that event-triggered reporting with Events A1 (for only SCell1 i.e. cell2), A2 (PCell and SCells) and A6 is used. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. During T1 the UE shall not have any information on cell 4. At the beginning of T2 the transmission power of cell 4 is increased to the same level as for cell 3, and due to usage of an offset this shall result in reporting of Event A6. Also, at the beginning of T2 the transmission power of cell 2 is increased to the same level as for cell 1, which shall result in reporting of Event A1. At the beginning of T3 the transmission powers of cells 1, 2, 3 and 4 are reduced below a threshold value and this shall result in reporting of Event A2 for Cell 1, for Cell 2 and for Cell 3.

Table A.8.16.27.1-1: General test parameters for E-UTRAN TDD-FDD 3 DL CA event triggered reporting under fading propagation conditions with 2 configured but deactivated SCells in non-DRX with PCell in FDD

	Parameter	Unit	Value	Comment
	RA RF Channel Number		1, 2, 3	Three radio channels are used for this test
Activ	e PCell		Cell 1	Primary cell on RF channel number 1.
Confi	gured deactivated SCell		Cell 2	Configured deactivated secondary cell on RF
Com	gured deactivated Scell		Oeii Z	channel number 2.
Confi	gured deactivated SCell		Cell 3	Configured deactivated secondary cell on RF
COIIII	gured deactivated Scell		Cell 3	channel number 3.
Neigh	nbour cell		Cell 4	Neighbour cell to be identified on RF channel number 3.
CP le	ength		Normal	
DRX			OFF	Continuous monitoring of primary cell
				As specified in table 4.2-1 in TS 36.211. The
Spec	ial subframe configuration		6	same configuration applies to all TDD cells
•	5			(cell2, cell3 and cell4).
				As specified in table 4.2-2 in TS 36.211. The
Uplin	k-downlink configuration		1	same configuration applies to all TDD cells
•	9			(cell2, cell3 and cell4).
	Hysteresis	dB	0	Hysteresis for evaluation of event A1.
	-			Actual RSRP threshold for event A1. Needs to
A1	Threshold RSRP	dBm	-98	take absolute accuracy tolerance in section
				9.1.11.1 into account plus margin.
	Time To Trigger	s	0	
	Hysteresis	dB	0	Hysteresis for evaluation of event A2.
			<u> </u>	Actual RSRP threshold for event A2. Needs to
A2	Threshold RSRP	dBm	-98	take absolute accuracy tolerance in section
				9.1.11.1 into account plus margin.
	Time To Trigger	S	0	
	Hysteresis	dB	0	Hysteresis for evaluation of event A6.
			-	Offset parameter for evaluation of event A6.
	Offset	dB	-6	Needs to take relative accuracy tolerance in
A6	0501		· ·	section 9.1.11.2 into account plus margin.
	Report on leave		False	oosiion otti na assouti pius matym
	Time To Trigger	S	0	
Cell-i	ndividual offset for cells on			Individual offset for cells on primary component
	hannel number 1	dB	0	carrier.
	ndividual offset for cells on	ı.	•	Individual offset for cells on secondary
	hannel number 2	dB	0	component carrier.
	ndividual offset for cells on			Individual offset for cells on secondary
	hannel number 3	dB	0	component carrier.
	coefficient		0	L3 filtering is not used
	I measurement cycle			3
	sCycleSCell)	ms	320	
ппеа	,			During this time the cell1 and cell3 shall be
(mea				
<u>(mea</u> T1		s	5	known to the UE: but cell2 and cell 4 shall be
		S	5	known to the UE; but cell2 and cell 4 shall be unknown to the UE.
T1				unknown to the UE.
		s s	5 ≤12	unknown to the UE. UE should report Event A1 for cell2 and event
T1				unknown to the UE.

Table A.8.16.27.1-2: Cell specific test parameters for E-UTRAN TDD-FDD 3 DL CA event triggered reporting under fading propagation conditions with 2 configured but deactivated SCells in non-DRX with PCell in FDD

Parameter	Unit		Cell 1			Cell 2			Cell 3			Cell 4			
		T1	T2	T3	T1	T2	T3	T1	T2	Т3	T1	T2	T3		
E-UTRA RF Channel		1 2 3						3							
Number															
BW _{channel}			Hz: N _{RB,c} =			Hz: N _{RB,c} =					$N_{RB,c} = 25$				
			IHz: N _{RB,c}			1Hz: N _{RB,c}						$N_{RB,c} = 50$			
			Hz: N _{RB,c} =		20M	Hz: N _{RB,c} =	= 100			20MHz: N	$N_{RB,c} = 100$				
PDSCH parameters:			IHz: R.5 F			-			-			-			
DL Reference			/Hz: R.0 F												
Measurement Channel		201\	/lHz: R.4 F	-טט											
PCFICH/PDCCH/PHI		ENA	Hz: R.11 F	-DD	ENA	Hz: R.11 T	-DD	ENA	Hz: R.11 7	TDD.	ENAL	Hz: R.11	רשי		
CH parameters:			пz. к.тт ЛНz: R.6 F			пz. к.тт. ИНz: R.6 1			пz. к. г г ИНz: R.6 1			12. K. 1 1 1Hz: R.6 1			
DL Reference			IHz: R.10			1Hz: R.10			1Hz: R.10			Hz: R.10			
Measurement		2010	11 12. 11. 10	טטו	2010	11 12. 11. 10	טטו	2010	11 12. 13. 10	טטו	20101	112. 11.10	טטו		
Channel															
OCNG Patterns		5ME	lz: OP.15	FDD	5ME	lz: OP.10	TDD	5MF	lz: OP.10	TDD	5MH	z: OP.10	TDD		
			Hz: OP.1			Hz: OP.2			1Hz: OP.2			Hz: OP.2			
			Hz: OP.11			Hz: OP.8		20MHz: OP.8 TDD			20MHz: OP.8 TDD				
PBCH_RA	dB														
PBCH_RB	dB														
PSS_RA	dB														
SSS_RA	dB														
PCFICH_RB	dB														
PHICH_RA	dB														
PHICH_RB	dB		0			0			0			0			
PDCCH_RA	dB														
PDCCH_RB	dB														
PDSCH_RA	dB														
PDSCH_RB	dB														
OCNG_RA ^{Note 1}	dB														
OCNG_RB ^{Note 1}	dB														
Note 2	dBm/15 KHz		-104	1		-104	1	-104					1		
Ê _s /N _{oc}	dB	17	17	-3	-infinity	17	-3	17	17	-3	-infinity	17	-3		
Ê _s /l _{ot} Note 3	dB	17	17	-3	-infinity	17	-3	17	-0.09	-4.76	-infinity	-0.09	-4.76		
RSRP Note 3	dBm/15 kHz	-87	-87	-107	-infinity	-87	-107	-87	-87	-107	-infinity	-87	-107		
SCH_RP Note 3	dBm/15 kHz	-87	-87	-107	-infinity	-87	-107	-87	-87	-107	-infinity	-87	-107		
IO '''	dBm/Ch BW	-59.13	-59.13	-74.45	-76.22	-59.13	-74.45	-59.13	-56.17	-73.20	0				
		+10log	+10log	+10log	+10log	+10log	+10log	+10log				mns tor			
		(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} (N _{RB,c} (N _{RB,c} Cell 3							
Propagation Condition		730)	AWGN	/30)	730)	ETU70	/30)	730)	ETU70 ETU70						
Correlation Matrix and			1x2			1x2 Low			1x2 Low		1x2 Low				
Antenna Configuration															

Timing offset to Cell 1	μs	-	0	0	3
Time alignment error relative to cell 1 Note 5	μs	-	≤ TAE	≤ TAE	N/A
Time alignment error relative to cell 2 Note 5	μs	-	-	≤ TAE	N/A

- Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.
- Note 3: Es/lot, RSRP, SCH_RP and lo have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 4: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.
- Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

A.8.16.27.2 Test Requirements

The UE shall send one Event A6 triggered measurement report for cell 4 with a measurement reporting delay of less than 6.4s (20×measCycleSCell) from the beginning of time T2.

The UE shall send one Event A1 triggered measurement report for Cell 2 with a measurement reporting delay of less than 6.4s (20×measCycleSCell from beginning of time T2.

The UE shall send one Event A2 triggered measurement report for Cell 1 with a measurement reporting delay of less than 200 ms from beginning of time T3.

The UE shall send one Event A2 triggered measurement report for Cell 2 with a measurement reporting delay of less than 1.6s ($5 \times$ measCycleSCell) from beginning of time T3.

The UE shall send one Event A2 triggered measurement report for Cell 3 with a measurement reporting delay of less than 1.6s ($5 \times$ measCycleSCell) from beginning of time T3.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90% for each of the events.

NOTE: The actual overall delays measured in the tests may be up to 2×TTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.16.28 3 DL PCell in TDD CA Event Triggered Reporting with 2 Deactivated SCells in Non-DRX

A.8.16.28.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects events A1 (Serving cell becomes better than threshold), A2 (Serving cell becomes worse than threshold) and A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] within the requirements stated in clause 8.3.3.2.1.

The test parameters are given in Tables A.8.16.28.1-1 and A.8.16.28.1-2 below. It is indicated to the UE in the measurement control information that event-triggered reporting with Events A1 (for only SCell1 i.e. cell2), A2 (PCell and SCells) and A6 is used. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. During T1 the UE shall not have any information on cell 4. At the beginning of T2 the transmission power of cell 4 is increased to the same level as for cell 3, and due to usage of an offset this shall result in reporting of Event A6. Also, at the beginning of T2 the transmission power of cell 2 is increased to the same level as for cell 1, which shall result in reporting of Event A1. At the beginning of T3 the transmission powers of cells 1, 2, 3 and 4 are reduced below a threshold value and this shall result in reporting of Event A2 for Cell 1, for Cell 2 and for Cell 3.

Table A.8.16.28.1-1: General test parameters for E-UTRAN TDD-FDD 3 DL CA event triggered reporting under fading propagation conditions with 2 configured but deactivated SCells in non-DRX with PCell in TDD

	Parameter	Unit	Value	Comment
E-UT	RA RF Channel Number		1, 2, 3	Three radio channels are used for this test
Activ	e PCell		Cell 1	Primary cell on RF channel number 1.
Conf	igured deactivated SCell		Cell 2	Configured deactivated secondary cell on
				RF channel number 2.
Conf	igured deactivated SCell		Cell 3	Configured deactivated secondary cell on
				RF channel number 3.
Neig	hbour cell		Cell 4	Neighbour cell to be identified on RF
				channel number 3.
	ength		Normal	
DRX			OFF	Continuous monitoring of primary cell
Spec	cial subframe configuration		_	As specified in table 4.2-1 in TS 36.211.
			6	The same configuration applies to TDD
				cell (cell1).
Uplir	k-downlink configuration		4	As specified in table 4.2-2 in TS 36.211.
			1	The same configuration applies to TDD
A1	Hyptoropic	dB	0	cell (cell1). Hysteresis for evaluation of event A1.
ΑI	Hysteresis Threshold RSRP	dВm	0 -98	Actual RSRP threshold for event A1.
	Tilleshold KSKP	ubili	-90	Needs to take absolute accuracy tolerance
				in section 9.1.11.1 into account plus
				margin.
	Time To Trigger	S	0	margin.
A2	Hysteresis	dB	0	Hysteresis for evaluation of events A1 A2.
/ _	Threshold RSRP	dBm	-98	Actual RSRP threshold for events A2.
	Timedileia iterti	abiii	00	Needs to take absolute accuracy tolerance
				in section 9.1.11.1 into account plus
				margin.
	Time To Trigger	S	0	Ĭ
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.
	Offset	dB	-6	Offset parameter for evaluation of event
				A6. Needs to take relative accuracy
				tolerance in section 9.1.11.2 into account
				plus margin.
	Report on leave		False	
	Time To Trigger	S	0	
	individual offset for cells on	dB	0	Individual offset for cells on primary
	hannel number 1			component carrier.
	individual offset for cells on	dB	0	Individual offset for cells on secondary
	hannel number 2	15		component carrier.
	individual offset for cells on	dB	0	Individual offset for cells on secondary
	hannel number 3		•	component carrier.
	coefficient		0	L3 filtering is not used
	I measurement cycle	ms	320	
T1	asCycleSCell)		5	During this time the cell1 and cell3 shall be
11		S	5	known to the UE; but cell2 and cell 4 shall
				be unknown to the UE.
T2		e	≤12	UE should report Event A1 for cell2 and
12		S	ے ا ح	event A6 for cell4 within 6.4s
				(20×scellMeasCycle)
T3		S	5	UE should report Event A2 within 200 ms.
13		٦	3	1.6s, and 1.6s for cells 1, 2 and 3,
				respectively.

Table A.8.16.28.1-2: Cell specific test parameters for E-UTRAN TDD-FDD 3

DL CA event triggered reporting under fading propagation

conditions with 2 configured but deactivated SCells in non-DRX with PCell in TDD

Parameter	Unit		Cell 1			Cell 2			Cell 3			Cell 4		
		T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel Number			1	•		2	•		•		3	I		
BW _{channel}		5MI	Hz: N _{RB,c} =	= 25	5MI	Hz: N _{RB,c} =	= 25	5MHz:			N _{RB,c} = 25			
			IHz: N _{RB,c} :			IHz: N _{RB,c}					$N_{RB,c} = 50$			
			Hz: N _{RB,c} =		20MI	Hz: N _{RB,c} =	= 100			20MHz: N	$N_{RB,c} = 100$			
PDSCH parameters:			IHz: R.4 T			-			-			-		
DL Reference			/Hz: R.0 T											
Measurement		201	//Hz: R.3 Т	טט										
Channel PCFICH/PDCCH/PHI		C N 41	II D 44 T		C N 41	I D 44 F	-DD	- T. A	I I =	-DD	C N 41	U=. D 44 F	.DD	
CH parameters:			Hz: R.11 Т ИНz: R.6 Т			Hz: R.11 F //Hz: R.6 F			Hz: R.11 F ИHz: R.6 F			Hz: R.11 F ИHz: R.6 F		
DL Reference			//m2. K.6 / IHz: R.10			/IПZ. К.6 г IHz: R.10			ипz. к.о г 1Hz: R.10			ипz. к.о г lHz: R.10		
Measurement		2010	II IZ. K. IU	טטו	2010	II IZ. K. IU	ГОО	2010	II IZ. K. IU	רטט	2010	II IZ. K. IU I	טט	
Channel														
OCNG Patterns		5MI	Hz: OP.9 T	ΓDD	5ML	Iz: OP.16	FDD	5MF	lz: OP.16	FDD	5ME	lz: OP.16	FDD	
oono i allome			Hz: OP.1			Hz: OP.2			Hz: OP.2			Hz: OP.2		
			Hz: OP.7			Hz: OP.12			Hz: OP.12		20MHz: OP.12 FDD			
PBCH_RA	dB													
PBCH_RB	dB													
PSS_RA	dB													
SSS_RA	dB													
PCFICH_RB	dB													
PHICH_RA	dB													
PHICH_RB	dB		0			0			0			0		
PDCCH_RA	dB													
PDCCH_RB	dB													
PDSCH_RA	dB													
PDSCH_RB	dB													
OCNG_RANote 1	dB													
OCNG_RB ^{Note 1}	dB													
Note 2	dBm/15 KHz		-104	1		-104	1	-104						
Ê _s /N _{oc}	dB	17	17	-3	-infinity	17	-3	17	17	-3	-infinity	17	-3	
Ê _s /I _{ot} Note 3	dB	17	17	-3	-infinity	17	-3	17	-0.09	-4.76	-infinity	-0.09	-4.76	
RSRP Note 3	dBm/15 kHz	-87	-87	-107	-infinity	-87	-107	-87	-87	-107	-infinity	-87	-107	
SCH_RP Note 3 Io Note 3	dBm/15 kHz	-87	-87	-107	-infinity	-87	-107	-87	-87	-107	-infinity	-87	-107	
10 1000	dBm/Ch BW	-59.13	-59.13	-74.45	-76.22	-59.13	-74.45				,			
		+10log	+10log	+10log	+10log	+10log	+10log				nns tor			
		(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)						
Propagation Condition		/30)	AWGN	730)	/30)	ETU70	730)	ETU70 ETU70						
Correlation Matrix and			1x2			1x2 Low		1x2 Low 1x2 Low						
Antenna Configuration									. AL LOW			LOW		

Timing offset to Cell 1	μs	-	0	0	3
Time alignment error relative to cell 1 Note 5	μs	-	≤ TAE	≤ TAE	N/A
Time alignment error relative to cell 2 Note 5	μs	-	-	≤ TAE	N/A

- Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.
- Note 3: Es/lot, RSRP, SCH_RP and lo have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 4: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.
- Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

A.8.16.28.2 Test Requirements

The UE shall send one Event A6 triggered measurement report for cell 4 with a measurement reporting delay of less than 6.4s (20×measCycleSCell) from the beginning of time T2.

The UE shall send one Event A1 triggered measurement report for Cell 2 with a measurement reporting delay of less than 6.4s (20×measCycleSCell from beginning of time T2.

The UE shall send one Event A2 triggered measurement report for Cell 1 with a measurement reporting delay of less than 200 ms from beginning of time T3.

The UE shall send one Event A2 triggered measurement report for Cell 2 with a measurement reporting delay of less than 1.6s ($5 \times$ measCycleSCell) from beginning of time T3.

The UE shall send one Event A2 triggered measurement report for Cell 3 with a measurement reporting delay of less than 1.6s (5× measCycleSCell) from beginning of time T3.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90% for each of the events.

NOTE: The actual overall delays measured in the tests may be up to $2 \times TTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.16.29 3 DL FDD CA Event Triggered Reporting under Deactivated SCells in Non-DRX

A.8.16.29.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects Events A1 (Serving cell becomes better than threshold), A2 (Serving cell becomes worse than threshold) and A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] within the requirements stated in clause 8.3.3.2.1.

The test parameters are given in Tables A.8.16.29.1-1 and A.8.16.29.1-2 below. It is indicated to the UE in the measurement control information that event-triggered reporting with Events A1 (SCell 1), Events A2 (PCell and SCell 1/2) and A6 is used. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. During T1 the UE shall not have any information on cell 4. Immediately at beginning of T2 the transmission power of cell 2 is increased above a threshold value such that this shall result in reporting of Event A1 for SCell 1, and cell 4 is increased to the same level as for Cell 3. Due to usage of an offset this shall result in reporting of Event A6. At beginning of T3 the transmission powers of cells 1, 2, 3 and 4 are reduced below a threshold value and this shall result in reporting of Event A2 for PCell and SCell 1/2, respectively.

Table A.8.16.29.1-1: General test parameters for E-UTRAN FDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions

	Parameter	Unit	Value	Comment
E-UT Num	RA RF Channel		1, 2, 3	Three radio channels are used for this test
	e PCell		Cell 1	Primary cell on RF channel number 1.
	gured deactivated			Configured deactivated secondary cell 1
SCel			Cell 2 (SCell 1)	on RF channel number 2.
			Call 2 (SCall 2)	Configured deactivated secondary cell 2
			Cell 3 (SCell 2)	on RF channel number 3.
Neigl	nbour cell		Cell 4	Neighbor cell to be identified on RF channel number 3.
CP le	ength		Normal	
DRX			OFF	Continuous monitoring of primary cell
A1	Hysteresis	dB	0	Hysteresis for evaluation of event A1.
	Threshold RSRP	dBm	-98	Actual RSRP threshold for event A1. Needs to take absolute accuracy tolerance in clause 9.1.11.1 into account plus margin. No event A1 reporting is configured for cell 1 and 3.
	Time To Trigger	S	0	
A2	Hysteresis	dB	0	Hysteresis for evaluation of event A2.
	Threshold RSRP	dBm	-98	Actual RSRP threshold for event A2. Needs to take absolute accuracy tolerance in clause 9.1.11.1 into account plus margin.
	Time To Trigger	S	0	
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.
	Offset	dB	-6	Offset parameter for evaluation of event A6. Needs to take relative accuracy tolerance in clause 9.1.11.2 into account plus margin.
	Report on leave		False	
	Time To Trigger	S	0	
	ndividual offset for cells F channel number 1	dB	0	Individual offset for cells on primary component carrier.
	ndividual offset for cells F channel number 2	dB	0	Individual offset for cells on secondary component carrier 1.
Cell-i	ndividual offset for cells F channel number 3	dB	0	Individual offset for cells on secondary component carrier 2.
	coefficient		0	L3 filtering is not used
SCel	measurement cycle sCycleSCell) for SCell	ms	320	<u> </u>
T1		S	5	During this time the UE shall be aware of cells 1, 2 and 3 but not cell 4.
T2		S	≤12	UE should report Event A1 within 1.6s (5xscellMeasCycle) UE should report Event A6 within 6.4s (20xscellMeasCycle)
Т3		S	5	UE should report Event A2 within 200 ms and 1.6s for cells 1, 2 and 3, respectively.

Table A.8.16.29.1-2: Cell specific test parameters for E-UTRAN FDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions

Parameter	Unit		Cell 1			Cell 2			Cell 3			Cell 4		
		T1	T2	T3	T1	T2	Т3	T1	T2	Т3	T1	T2	T3	
E-UTRA RF Channel			1		_	2		_			3			
Number														
BW _{channel}			Hz: N _{RB,c} =			Hz: N _{RB,c} =					$I_{RB,c} = 25$			
			IHz: N _{RB,c} :			IHz: N _{RB,c} :					$N_{RB,c} = 50$			
			Hz: N _{RB,c} =		20M	Hz: N _{RB,c} =	: 100			20MHz: N	N _{RB,c} = 100			
PDSCH parameters:			IHz: R.5 F			-			-			-		
DL Reference			/Hz: R.0 F											
Measurement		201	⁄IHz: R.4 F	סט										
Channel									5 4 : -					
PCFICH/PDCCH/PHI			Hz: R.11 F			Hz: R.11 F			Hz: R.11 F			Hz: R.11 F		
CH parameters:			/Hz: R.6 F			ИНz: R.6 F			MHz: R.6 F			1Hz: R.6 I		
DL Reference		2010	IHz: R.10 I	רטט	2010	1Hz: R.10 I	-טט	2010	1Hz: R.10	רטט	20M	Hz: R.10	רטט	
Measurement														
Channel OCNG Patterns		ENAI	lz: OP.15	EDD	ENAL	lz: OP.16	EDD	ENAL	lz: OP.16	EDD	ENALI	z: OP.16	EDD	
OCING Patterns			Hz: OP.15			Hz: OP.16			Hz: OP. 16					
			Hz: OP.11			Hz: OP.12			mz. ОР.2 Hz: ОР.12		10MHz: OP.2 FDD 20MHz: OP.12 FDD			
PBCH_RA	dB	201111			251111	02		251111	0		201111	02		
PBCH_RB	dB													
PSS_RA	dB													
SSS_RA	dB													
PCFICH_RB	dB													
PHICH_RA	dB													
PHICH_RB	dB		0			0			0			0		
PDCCH_RA	dB													
PDCCH_RB	dB													
PDSCH_RA	dB													
PDSCH_RB	dB													
OCNG_RA ^{Note 1}	dB													
OCNG_RB ^{Note 1}	dB													
Noc Note 2			-104			-104		-1			04			
Ê _s /N _{oc}	dB	17	17	-3	-infinity	17	-3	17	17	-3	-infinity	17	-3	
Ê _s /I _{ot} Note 3	dB	17	17	-3	-infinity	17	-3	17	-0.09	-4.76	-infinity	-0.05	-4.76	
RSRP Note 3	dBm/15 kHz	-87	-87	-107	-infinity	-87	-107	-87 -87 -107			-infinity	-87	-107	
SCH_RP Note 3	dBm/15 kHz	-87	-87	-107	-infinity	-87	-107				-infinity	-87	-107	
lo Note 3	dBm/Ch BW	-59.13	-59.13	-74.45	-76.22	-59.13	-74.45	-59.13	-56.17	-73.20				
		+10log	+10log	+10log	+10log	+10log	+10log	+10log	+10log	+10log	Specifie	ed in colu	mns for	
		(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}							
		/50)	/50)	/50)	/50)	/50)	/50)	/50)	/50) /50) /50)					

Propagation Condition		AWGN	ETU70	ETU70	ETU70
Correlation Matrix and		1x2	1x2 Low	1x2 Low	1x2 Low
Antenna Configuration					
Timing offset to Cell 1	μs	-	0	0	3
Time alignment error relative to cell 1 Note 5	μs	-	≤ TAE	≤ TAE	N/A
Time alignment error relative to cell 2 Note 5	μs	-	-	≤ TAE	N/A

- Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.
- Note 3: Es/lot, RSRP, SCH_RP and lo have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 4: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.
- Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

A.8.16.29.2 Test Requirements

The UE shall send one Event A6 triggered measurement report for cell 4 with a measurement reporting delay of less than 6.4s (20×measCycleSCell) from the beginning of time T2.

The UE shall send one Event A1 triggered measurement report for Cell 2 with a measurement reporting delay of less than 6.4s (20×measCycleSCell) from beginning of time T2.

The UE shall send one Event A2 triggered measurement report for Cell 1 with a measurement reporting delay of less than 200 ms from beginning of time T3.

The UE shall send one Event A2 triggered measurement report for Cell 2 with a measurement reporting delay of less than 1.6s ($5 \times$ measCycleSCell) from beginning of time T3.

The UE shall send one Event A2 triggered measurement report for Cell 3 with a measurement reporting delay of less than 1.6s (5× measCycleSCell) from beginning of time T3.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90% for each of the events.

NOTE: The actual overall delays measured in the tests may be up to $2 \times TTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.16.30 3 DL TDD CA Event Triggered Reporting under Deactivated SCells in Non-DRX

A.8.16.30.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects Events A1 (Serving cell becomes better than threshold), A2 (Serving cell becomes worse than threshold) and A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] within the requirements stated in clause 8.3.3.2.1.

The test parameters are given in Tables A.8.16.30.1-1 and A.8.16.30.1-2 below. It is indicated to the UE in the measurement control information that event-triggered reporting with Events A1 (SCell 1), Events A2 (PCell and SCell 1/2) and A6 is used. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. During T1 the UE shall not have any information on cell 4. Immediately at beginning of T2 the transmission power of cell 2 is increased above a threshold value such that this shall result in reporting of Event A1 for SCell 1, and cell 4 is increased to the same level as for Cell 3. Due to usage of an offset this shall result in reporting of Event A6. At beginning of T3 the transmission powers of cells 1, 2, 3 and 4 are reduced below a threshold value and this shall result in reporting of Event A2 for PCell and SCell 1/2, respectively.

Table A.8.16.30.1-1: General test parameters for E-UTRAN TDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions

	Parameter	Unit	Value	Comment
	RA RF Channel		1, 2, 3	Three radio channels are used for this test
Numl				
	e PCell		Cell 1	Primary cell on RF channel number 1.
Confi SCel	gured deactivated		Cell 2 (SCell 1)	Configured deactivated secondary cell 1 on RF channel number 2.
			Cell 3 (SCell 2)	Configured deactivated secondary cell 2 on RF channel number 3.
Neigh	nbour cell		Cell 4	Neighbor cell to be identified on RF channel number 3.
CP le	enath		Normal	Griatifier Hamber 6.
DRX			OFF	Continuous monitoring of primary cell
A1	Hysteresis	dB	0	Hysteresis for evaluation of event A1.
	Threshold RSRP	dBm	-98	Actual RSRP threshold for event A1. Needs to take absolute accuracy tolerance in clause 9.1.11.1 into account plus margin. No event A1 reporting is configured for cell 1 and 3.
	Time To Trigger	S	0	
A2	Hysteresis	dB	0	Hysteresis for evaluation of event A2.
	Threshold RSRP	dBm	-98	Actual RSRP threshold for event A2. Needs to take absolute accuracy tolerance in clause 9.1.11.1 into account plus margin.
	Time To Trigger	S	0	
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.
	Offset	dB	-6	Offset parameter for evaluation of event A6. Needs to take relative accuracy tolerance in clause 9.1.11.2 into account plus margin.
	Report on leave		False	
	Time To Trigger	S	0	
	ndividual offset for cells channel number 1	dB	0	Individual offset for cells on primary component carrier.
Cell-i	ndividual offset for cells channel number 2	dB	0	Individual offset for cells on secondary component carrier 1.
Cell-i	ndividual offset for cells channel number 3	dB	0	Individual offset for cells on secondary component carrier 2.
	coefficient		0	L3 filtering is not used
SCel	measurement cycle sCycleSCell) for SCell	ms	320	
T1			5	During this time the UE shall be aware of cells 1, 2 and 3 but not cell 4.
T2		S	≤12	UE should report Event A1 within 1.6s (5xscellMeasCycle) UE should report Event A6 within 6.4s (20xscellMeasCycle)
Т3		S	5	UE should report Event A2 within 200 ms and 1.6s for cells 1, 2 and 3, respectively.

Table A.8.16.30.1-2: Cell specific test parameters for E-UTRAN TDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions

Parameter	Unit		Cell 1			Cell 2			Cell 3			Cell 4		
		T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel			1			2					3			
Number														
BW _{channel}			Hz: N _{RB,c} =			Hz: N _{RB,c} =					$N_{RB,c} = 25$			
			1Hz: N _{RB,c}			IHz: N _{RB,c}					$N_{RB,c} = 50$			
			Hz: N _{RB,c} =		20M	Hz: N _{RB,c} =	= 100			20MHz: N	$N_{RB,c} = 100$			
PDSCH parameters:			1Hz: R.5 T			-			-			-		
DL Reference			ИHz: R.0 Т											
Measurement		201	ИHz: R.4 1	ΓDD										
Channel														
PCFICH/PDCCH/PHI			Hz: R.11 7			Hz: R.11 7			Hz: R.11 T			1z: R.11 1		
CH parameters:			ИHz: R.6 7			ИHz: R.6 Т			ИHz: R.6 Т			1Hz: R.6 T		
DL Reference		20N	1Hz: R.10	TDD	20N	IHz: R.10	TDD	20N	1Hz: R.10	TDD	20M	Hz: R.10	TDD	
Measurement														
Channel														
OCNG Patterns			lz: OP.15			lz: OP.16			lz: OP.16		5MH			
			IHz: OP.1			Hz: OP.2		10MHz: OP.2 TDD			10MHz: OP.2 TDD			
		20MI	Hz: OP.11	טטו	20MI	Hz: OP.12	טטו	20MHz: OP.12 TDD			20MF	lz: OP.12	טטו	
PBCH_RA	dB													
PBCH_RB	dB													
PSS_RA	dB													
SSS_RA	dB													
PCFICH_RB	dB													
PHICH_RA	dB													
PHICH_RB	dB		0			0			0			0		
PDCCH_RA	dB													
PDCCH_RB	dB													
PDSCH_RA	dB													
PDSCH_RB	dB													
OCNG_RA ^{Note 1}	dB													
OCNG_RB ^{Note 1}	dB													
Noc Note 2			-104			-104		-1			04			
Ë _a /N _{aa}	dB	17	17	-3	-infinity	17	-3	17	17	-3	-infinity	17	-3	
Ê _s /I _{ot} Note 3	dB	17	17	-3	-infinity	17	-3	17	-0.09	-4.76	-infinity	-0.05	-4.76	
RSRP Note 3	dBm/15 kHz	-87	-87	-107	-infinity	-87	-107	-87	-87	-107	-infinity	-87	-107	
SCH_RP Note 3	dBm/15 kHz	-87	-87	-107	-infinity	-87	-107	-87	-87	-107	-infinity	-87	-107	
lo Note 3	dBm/Ch BW	-59.13	-59.13	-74.45	-76.22	-59.13	-74.45	-59.13	-56.17	-73.20				
		+10log	+10log	+10log	+10log	+10log	+10log	+10log	+10log	+10log	Specifi	ed in colu	mns for	
		$(N_{RB,c}$	(N _{RB,c}	$(N_{RB,c}$	$(N_{RB,c}$	(N _{RB,c}	$(N_{RB,c}$	(N _{RB,c}	(N _{RB,c}	$(N_{RB,c}$		Cell 3		
		/50)	/50)	/50)	/50)	/50)	/50)	/50)	/50)	/50)				

Propagation Condition		AWGN	ETU70	ETU70	ETU70
Correlation Matrix and		1x2 Low	1x2 Low	1x2 Low	1x2 Low
Antenna Configuration					
Timing offset to Cell 1	μs	-	0	0	3
Time alignment error relative to cell 1 Note 5	μs	-	≤ TAE	≤ TAE	N/A
Time alignment error relative to cell 2 Note 5	μs	-	-	≤ TAE	N/A

- Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.
- Note 3: Es/lot, RSRP, SCH_RP and lo have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 4: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.
- Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

A.8.16.30.2 Test Requirements

The UE shall send one Event A6 triggered measurement report for cell 4 with a measurement reporting delay of less than 6.4s (20×measCycleSCell) from the beginning of time T2.

The UE shall send one Event A1 triggered measurement report for Cell 2 with a measurement reporting delay of less than 6.4s (20×measCycleSCell) from beginning of time T2.

The UE shall send one Event A2 triggered measurement report for Cell 1 with a measurement reporting delay of less than 200 ms from beginning of time T3.

The UE shall send one Event A2 triggered measurement report for Cell 2 with a measurement reporting delay of less than 1.6s (5× measCycleSCell) from beginning of time T3.

The UE shall send one Event A2 triggered measurement report for Cell 3 with a measurement reporting delay of less than 1.6s (5× measCycleSCell) from beginning of time T3.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90% for each of the events.

NOTE: The actual overall delays measured in the tests may be up to $2 \times TTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in PDCCH.

A.8.16.31 E-UTRAN TDD-FDD 3 DL CA Event Triggered Reporting on Deactivated SCell with PCell and SCell Interruptions in Non-DRX and with PCell in FDD

A.8.16.31.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects event A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] within the requirements stated in clause 8.3.3.2.1 while at the same time fulfilling the requirement on interruption rate.

The test parameters are given in Table A.8.16.31.1-1 and A.8.16.31.1-2 below. In the test there are four cells: Cell 1, Cell 2, Cell 3 and Cell 4. Cell 1 is PCell on the FDD primary component (RF Channel 1), Cell 2 is SCell on the TDD secondary component (RF Channel 2), and Cell 3 is SCell on the TDD secondary component (RF Channel 3) and Cell 4 is the neighbour cell on the TDD secondary component (RF Channel 3). It is indicated to the UE in the measurement control information that event-triggered reporting with Event A6 is used. The test consists of four successive time periods, with duration of T1, T2, T3 and T4, respectively. During T1 and T2, both Cell2 and Cell3 are deactivated. During T1 the UE shall not have any information of cell 4. Immediately at beginning of T2 the transmission power of cell 4 is increased to same level as for cell 3, and due to usage of an offset this shall result in reporting of Event A6.

At the beginning of T3, the transmission power of Cell 4 is turned off and the test equipment sends a MAC message for activation of Cell 2 to UE but Cell3 remains deactivated. Immediately at beginning of T4 the transmission power of cell 4 is increased to same level as for cell 3, and due to usage of an offset this shall result in reporting of Event A6. The UE shall be continuously scheduled in the PCell throughout the whole test and continuously scheduled in Cell 2 during T4.

Table A.8.16.31.1-1: General test parameters for E-UTRAN TDD-FDD 3 DL CA Event Triggered Reporting on Deactivated SCell with PCell and SCell Interruptions in Non-DRX and with PCell in FDD

	Parameter	Unit	Value	Comment						
E-UT	RA RF Channel		1 0 0	three radio channels are used for this test						
Num	ber		1, 2, 3							
Activ	e PCell		Cell 1	Primary cell on RF channel number 1.						
Conf	igured deactivated		Cell 2	Configured deactivated secondary cell or						
SCel			Cell 2	RF channel number 2.						
	igured deactivated		Cell 3	Configured deactivated secondary cell on						
SCel			Och 5	RF channel number 3.						
Neig	hbour cell		Cell 4	Neighbor cell to be identified on RF						
				channel number 3.						
	ength		Normal							
	cial subframe		6	As specified in table 4.2-1 in TS 36.211.						
	guration		•	The same configuration in TDD cells						
	k-downlink		1	As specified in table 4.2-2 in TS 36.211.						
	guration		-	The same configuration in TDD cells						
DRX		-	OFF	Continuous monitoring of primary cell						
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.						
	Offset	dB		Offset parameter for evaluation of event						
			-3	A6. Needs to take relative accuracy						
				tolerance in clause 9.1.11.2 into account						
				plus margin.						
	Report on leave		False							
	Time To Trigger	S	0							
	individual offset for cells	dB	0	Individual offset for cells on primary						
	F channel number 1	ID.	-	component carrier.						
	individual offset for cells	dB	0	Individual offset for cells on secondary						
	F channel number 2	-		component carrier.						
	individual offset for cells	dB	0	Individual offset for cells on secondary						
	F channel number 3		0	component carrier.						
	coefficient		0	L3 filtering is not used						
	I measurement cycle	ms	1280	During this times the LIE shall be successful.						
T1		S	5	During this time the UE shall be aware of						
T2		•		cells 1, 2 and 3 but not cell 4.						
12		S	≤30	UE should report Event A6 within 25.6s						
Т			1	(20xscellMeasCycle)						
T3 T4		S	1	During this time the UE shall activate cell 2						
14		S	≤10	UE should report Event A6 within 6.4s						
				(5xscellMeasCycle)						

Table A.8.16.31.1-2: Cell specific test parameters for E-UTRAN TDD-FDD 3 DL CA Event Triggered Reporting on Deactivated SCell with PCell and SCell Interruptions in Non-DRX and with PCell in FDD

Parameter	Unit		Ce	ell 1			Ce	ell 2			Ce	ell 3		Cell 4				
		T1 T2 T3 T4					T2	T3	T4	T1	T2	Т3	T4	T1	T2	T3	T4	
E-UTRA RF Channel Number				1				2				3		3				
BW _{channel}	MHz			$N_{RB,c} = 25$ $N_{RB,c} = 50$ $N_{RB,c} = 100$			10MHz:	$N_{RB,c} = 25$ $N_{RB,c} = 50$ $N_{RB,c} = 100$)		10MHz:	$N_{RB,c} = 25$ $N_{RB,c} = 50$ $N_{RB,c} = 100$		5MHz: N _{RB,c} = 25 10MHz: N _{RB,c} = 50 20MHz: N _{RB,c} = 100				
PDSCH parameters: DL Reference Measurement Channel			5MHz: 10MHz:	R.7 FDD R.3 FDD R.6 FDD		N/A	N/A	N/A	5MHz: R.4 TDD 10MHz : R.0 TDD 20MHz : R.3 TDD		۸	I/A		N/A				
PCFICH/PDCCH/ PHICH parameters: DL Reference Measurement Channel			10MHz:	R.11 FDD R.6 FDD R.10 FDD			10MHz:	R.11 TDD R.6 TDD R.10 TDD	.55		10MHz:	R.11 TDD R.6 TDD R.10 TDD		5MHz: R.11 TDD 10MHz: R.6 TDD 20MHz: R.10 TDD				
OCNG Pattern defined in A.3.2.1 and A.3.2.2		5MHz: OP.20 FDD 10MHz: OP.10 FDD 20MHz: OP.17 FDD				5MHz: OP.10 TDD 10MHz : OP.2 TDD 20MHz : OP.8 TDD	5MHz: OP.10 TDD 10MHz : OP.2 TDD 20MHz : OP.8 TDD	5MHz: OP.10 TDD 10MHz : OP.2 TDD 20MHz : OP.8 TDD	5MHz: OP.9 TDD 10MHz : OP.1 TDD 20MHz : OP.7 TDD		10MHz:	P.10 TDD OP.2 TDD OP.8 TDD		5MHz: OP.10 TDD 10MHz: OP.2 TDD 20MHz: OP.8 TDD				
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RB	dB			0				0				0		0				

OCNG_RA ^{Note 1}	dB																	
OCNG_RB ^{Note 1}	dB																	
N_{oc} Note 3	dBm/15 kHz		-1	01			-1	01		-101								
\hat{E}_s/N_{oc}	dB	16	16	16	16	16	16	16	16	16	16	16	16	-Infinity	16	-Infinity	16	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	16	16	16	16	16	16	16	16	16	-0.11	16	-0.11	-Infinity	-0.11	-Infinity	-0.11	
RSRP Note 4	dBm/15 kHz	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-Infinity	-85	-Infinity	-85	
SCH_RP Note 4	dBm/15 kHz	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-Infinity	-85	-Infinity	-85	
Io Note 3	dBm/Ch BW	-57.11 +10log (N _{RB,c} /50)	-54.15 +10log (N _{RB,c} /50)															
Propagation Condition			ÁW	GN				'GN			ÁW	'GN	,	AWGN				
Antenna Configuration			1)	x2			1:	x2			1:	x2		1x2				
Timing offset to Cell 1	μs			-				0				0		3				
Time alignment error relative to cell 1 Note 5	μs			-			≤⊺	AE			≤⊺	AE		N/A				
Time alignment error relative to cell 2 Note 5	μs			-				-			<u></u> ≤⊺	AE		N/A				

1038

OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. Note 1:

The resources for uplink transmission are assigned to the UE on cell1 prior to the start of time period T2 and on cell2 prior to the start of time period T4. Note 2:

Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Note 3: N_{oc} to be fulfilled.

RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation. Note 4:

Note 5:

A.8.16.31.2 Test Requirements

The UE shall send one Event A6 triggered measurement report, with a measurement reporting delay less than 25.6s (20×scellMeasCycle) from the beginning of time period T2.

The UE shall send one Event A6 triggered measurement report, with a measurement reporting delay less than 6.4s (5×scellMeasCycle) from the beginning of time period T4.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The UE shall be scheduled on PCell continuously throughout the test. From the start of T1 until the measurement report is received during T2, at least 99.5% of all expected ACK/NACKs shall be transmitted by the UE.

The UE shall be scheduled on Cell2 continuously from the start of T4 to the end. From the start of T4 until the measurement report is received during T4, at least 99.5% of all expected ACK/NACKs shall be transmitted by the UE.

For a test to be considered successful requirements on both event detection and percentage of transmitted ACK/NACKs have to be fulfilled simultaneously.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.16.32 E-UTRAN TDD-FDD 3 DL CA Event Triggered Reporting on Deactivated SCell with PCell and SCell Interruptions in Non-DRX and with PCell in TDD

A.8.16.32.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects event A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] within the requirements stated in clause 8.3.3.2.1 while at the same time fulfilling the requirement on interruption rate.

The test parameters are given in Table A.8.16.32.1-1 and A.8.16.32.1-2 below. In the test there are four cells: Cell 1, Cell 2, Cell 3 and Cell 4. Cell 1 is PCell on the TDD primary component (RF Channel 1), Cell 2 is SCell on the FDD secondary component (RF Channel 2), and Cell 3 is SCell on the FDD secondary component (RF Channel 3) and Cell 4 is the neighbour cell on the FDD secondary component (RF Channel 3). It is indicated to the UE in the measurement control information that event-triggered reporting with Event A6 is used. The test consists of four successive time periods, with duration of T1, T2, T3 and T4, respectively. During T1 and T2, both Cell2 and Cell3 are deactivated. During T1 the UE shall not have any information of cell 4. Immediately at beginning of T2 the transmission power of cell 4 is increased to same level as for cell 3, and due to usage of an offset this shall result in reporting of Event A6.

At the beginning of T3, the transmission power of Cell 4 is turned off and the test equipment sends a MAC message for activation of Cell 2 to UE but Cell3 remains deactivated. Immediately at beginning of T4 the transmission power of Cell 4 is increased to same level as for Cell 3, and due to usage of an offset this shall result in reporting of Event A6. The UE shall be continuously scheduled in the PCell throughout the whole test and continuously scheduled in Cell2 during T4.

Table A.8.16.32.1-1: General test parameters for E-UTRAN TDD-FDD 3 DL CA Event Triggered Reporting on Deactivated SCell with PCell and SCell Interruptions in Non-DRX and with PCell in TDD

	Parameter	Unit	Value	Comment						
E-UT	RA RF Channel		1, 2, 3	Three radio channels are used for this test						
Numl	ber		1, 2, 3							
	e PCell		Cell 1	Primary cell on RF channel number 1.						
	igured SCell		Cell 2	Configured secondary cell on RF channel number 2.						
	igured SCell		Cell 3	Configured secondary cell on RF channel number 3.						
	nbour cell		Cell 4	Neighbor cell to be identified on RF channel number 3.						
CP le			Normal							
config	ial subframe guration on PCell		6	As specified in table 4.2.1 in TS 36.211. The same configuration applies to all cells.						
	k-downlink guration on PCell		1							
DRX			OFF	Continuous monitoring of primary cell						
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.						
	Offset	dB	-3	Offset parameter for evaluation of event A6. Needs to take relative accuracy tolerance in clause 9.1.11.2 into account plus margin.						
	Report on leave		False							
	Time To Trigger	S	0							
	ndividual offset for cells F channel number 1	dB	0	Individual offset for cells on primary component carrier.						
	ndividual offset for cells F channel number 2	dB	0	Individual offset for cells on secondary component carrier.						
	ndividual offset for cells F channel number 3	dB	0	Individual offset for cells on secondary component carrier.						
Filter	coefficient		0	L3 filtering is not used						
	I measurement cycle	ms	1280							
T1		S	5	During this time the UE shall be aware of cells 1, 2 and 3 but not cell 4.						
T2		S	≤30	UE should report Event A6 within 25.6s (20xscellMeasCycle)						
Т3		S	1	During this time the UE shall activate cell 2						
T4		S	≤10	UE should report Event A6 within 6.4s (5xscellMeasCycle)						
NOTI	E: This test verifies the	RRM re	quirement which	ch is independent of channel bandwidth and is						

NOTE: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.32.1-2: Cell specific test parameters for E-UTRAN TDD-FDD 3 DL CA Event Triggered Reporting on Deactivated SCell with PCell and SCell Interruptions in Non-DRX and with PCell in TDD

Parameter	Unit		(Cell 1				C	ell 2			Се	II 3		Cell 4						
		T1	T2	T	3	T4	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	Т3	T4			
E-UTRA RF				1					2				3			3					
Channel Number																					
BW _{channel}	MHz			: N _{RB,c} =					$N_{RB,c} = 25$				$I_{RB,c} = 25$		$5MHz: N_{RB,c} = 25$						
	10MHz: $N_{RB,c} = 50$ 20MHz: $N_{RB,c} = 100$								$N_{RB,c} = 50$			10MHz: I					$N_{RB,c} = 50$				
77.0011									$N_{RB,c} = 100$			20MHz: N		0	20MHz: N _{RB,c} = 100						
PDSCH				z: R.4 T			N/A	N/A	N/A	5MHz:		N	/A		N/A						
parameters:				z: R.0 T						R.7 FDD											
DL Reference Measurement			20MH	z: R.3 T	טט																
Channel										10MHz : R.3											
Charmer										FDD											
										20MHz											
										: R.6											
										FDD											
PCFICH/PDCCH/P			5MHz	: R.11 T	DD			5MHz: I	R.11 FDD	1 100		5MHz: F	R.11 FDD		5MHz: R.11 FDD 10MHz: R.6 FDD						
HICH parameters				z: R.6 T					R.6 FDD				R.6 FDD								
	20MHz: R.10 TDD						R.10 FDD			20MHz: I			20MHz: R.10 FDD								
OCNG Pattern			5MHz	: OP.9 T	TDD		5MHz:	5MHz:	5MHz:	5MHz:		5MHz: O	P.16FDD	;	5MHz: OP.16FDD;						
defined in A.3.2.1				:: OP.1			OP.16	OP.16	OP.16	OP.20		10MHz:C		,	10MHz:OP.2 FDD;						
			20MHz	: OP. 7	TDD		FDD;	FDD;	FDD;	FDD;		20MHz: 0	P.12FDI	D		20MHz: (OP.12FDD				
							10MHz	10MHz	10MHz	10MHz											
							:OP.2	:OP.2	:OP.2	:OP.10											
							FDD;	FDD;	FDD;	FDD;											
							20MHz	20MHz	20MHz	20MHz											
							:	:	:	: OP.17											
							OP.12 FDD	OP.12 FDD	OP.12 FDD	FDD											
PBCH_RA	dB						100	ווו	וועטון]											
PBCH_RB	dB																				
PSS_RA	dB																				
SSS_RA	dB																				
PCFICH_RB	dB																				
PHICH_RA	dB			0					0				^				^				
PHICH_RB	dB		0				0				0				0						
PDCCH_RA	dB																				
PDCCH_RB	dB																				
PDSCH_RA	dB																				
PDSCH_RB OCNG_RA ^{Note 1}	dB dB	-										ı									
OCNG_RA																					
OUNG_KB	B_RB ^{Note 1} dB																				

$N_{oc}^{ m Note 3}$	dBm/15 kHz		-1	01			-1	01		-101								
\hat{E}_s/N_{oc}	dB	16	16	16	16	16	16	16	16	16	16	16	16	-Infinity	16	-Infinity	16	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	16	16	16	16	16	16	16	16	16	-0.11	16	-0.11	-Infinity	-0.11	-Infinity	-0.11	
RSRP Note 4	dBm/15 kHz	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-Infinity	-85	-Infinity	-85	
SCH_RP Note 4	dBm/15 kHz	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-Infinity	-85	-Infinity	-85	
lo Note 3	dBm/Ch BW	-57.11 +10log (N _{RB,c} /50)	-54.15 +10log (N _{RB,c} /50)															
Propagation Condition		,	ÁW	GN			ÁW	GN	,	,	ÁW	GN		AWGN				
Antenna Configuration			1)	K 2			1:	K 2			1)	(2		1x2				
Timing offset to Cell	μs			-			()			()		3				
Time alignment error relative to cell 1 Note5	μs	-					≤T	AE			≤T	AE		N/A				
Time alignment error relative to cell 2 Note5	μs	-				-					≤T	AE		N/A				

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission are assigned to the UE on cell1 prior to the start of time period T2 and on cell2 prior to the start of time period T4.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

A.8.16.32.2 Test Requirements

The UE shall send one Event A6 triggered measurement report, with a measurement reporting delay less than 25.6s (20×scellMeasCycle) from the beginning of time period T2.

The UE shall send one Event A6 triggered measurement report, with a measurement reporting delay less than 6.4s (5×scellMeasCycle) from the beginning of time period T4.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The UE shall be scheduled on PCell continuously throughout the test. From the start of T1 until the measurement report is received during T2, at least 99.5% of all expected ACK/NACKs shall be transmitted by the UE.

The UE shall be scheduled on Cell2 continuously from the beginning of T4 to the end. From the start of T4 until the measurement report is received during T4, at least 99.5% of all expected ACK/NACKs shall be transmitted by the UE.

For a test to be considered successful requirements on both event detection and percentage of transmitted ACK/NACKs have to be fulfilled simultaneously.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.16.33 E-UTRAN FDD 3 DL CA Event Triggered Reporting on Deactivated SCell with PCell and SCell Interruptions in Non-DRX

A.8.16.33.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects event A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] within the requirements stated in clause 8.3.3.2.1 while at the same time fulfilling the requirement on interruption rate.

The test parameters are given in Table A.8.16.33.1-1 and A.8.16.33.1-2 below. In the test there are four cells: Cell 1, Cell 2, Cell 3 and Cell 4. Cell 1 is PCell on the FDD primary component (RF Channel 1), Cell 2 is SCell on the FDD secondary component (RF Channel 2), and Cell 3 is SCell on the FDD secondary component (RF Channel 3) and Cell 4 is the neighbour cell on the FDD secondary component (RF Channel 3). It is indicated to the UE in the measurement control information that event-triggered reporting with Event A6 is used. The test consists of four successive time periods, with duration of T1, T2, T3 and T4, respectively. During T1 and T2, both Cell2 and Cell3 are deactivated. During T1 the UE shall not have any information of cell 4. Immediately at beginning of T2 the transmission power of cell 4 is increased to same level as for cell 3, and due to usage of an offset this shall result in reporting of Event A6.

At the beginning of T3, the transmission power of Cell 4 is turned off and the test equipment sends a MAC message for activation of Cell 2 to UE but Cell3 remains deactivated. Immediately at beginning of T4 the transmission power of Cell 4 is increased to same level as for Cell 3, and due to usage of an offset this shall result in reporting of Event A6. The UE shall be continuously scheduled in the PCell throughout the whole test and continuously scheduled in Cell2 during T4.

Table A.8.16.33.1-1: General test parameters for E-UTRAN FDD 3 DL CA Event Triggered Reporting on Deactivated SCell with PCell and SCell interruptions in Non-DRX

	Parameter	Unit	Value	Comment				
E-UT	RA RF Channel		1, 2, 3	Three radio channels are used for this test				
Numl	ber		1, 2, 3					
	e PCell		Cell 1	Primary cell on RF channel number 1.				
Confi	gured deactivated		Cell 2	Configured deactivated secondary cell on				
SCel			OGII Z	RF channel number 2.				
	gured deactivated		Cell 3	Configured deactivated secondary cell on				
SCel			0011 0	RF channel number 3.				
Neigl	Neighbour cell		Cell 4	Neighbor cell to be identified on RF				
				channel number 3.				
CP le			Normal					
DRX			OFF	Continuous monitoring of primary cell				
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.				
	Offset	dB		Offset parameter for evaluation of event				
			-3	A6. Needs to take relative accuracy				
			3	tolerance in clause 9.1.11.2 into account				
				plus margin.				
	Report on leave		False					
	Time To Trigger	S	0					
	ndividual offset for cells	dB	0	Individual offset for cells on primary				
	F channel number 1		· ·	component carrier.				
	ndividual offset for cells	dB	0	Individual offset for cells on secondary				
	F channel number 2		•	component carrier.				
	ndividual offset for cells	dB	0	Individual offset for cells on secondary				
	F channel number 3			component carrier.				
Filter	coefficient		0	L3 filtering is not used				
	I measurement cycle	ms	1280					
T1		S	5	During this time the UE shall be aware of				
			•	cells 1, 2 and 3 but not cell 4.				
T2		S	≤30	UE should report Event A6 within 25.6s				
				(20xscellMeasCycle)				
	T3		1	During this time the UE shall activate cell 2				
T4		S	≤10	UE should report Event A6 within 6.4s				
				(5xscellMeasCycle)				

Table A.8.16.33.1-2: Cell specific test parameters for E-UTRAN FDD 3 DL CA Event Triggered Reporting on Deactivated SCell with PCell and SCell interruptions in Non-DRX (Cell #1 and Cell #2)

Parameter	Unit		Се	II 1			Ce	II 2			Ce	ell 3		Cell 4			
		T1	T2	T3	T4	T1	T2	Т3	T4	T1	T2	T3	T4	T1	T2	T3	T4
E-UTRA RF Channel			1	1			2	2				3			3		
Number																	
BW _{channel}			5MHz: N					I _{RB,c} = 25				$I_{RB,c} = 25$				$I_{RB,c} = 25$	
			10MHz: N					$N_{RB,c} = 50$				$N_{RB,c} = 50$				$N_{RB,c} = 50$	
DD00H			20MHz: N		1	N1/A		$I_{RB,c} = 100$	584LL	20MHz: N _{RB,c} = 100 N/A					$N_{RB,c} = 100$)	
PDSCH parameters: DL Reference			5MHz: F 10MHz:			N/A	N/A	N/A	5MHz: R.7	N/A			N/A				
Measurement Channel			20MHz:						FDD								
Measurement Chamilei			ZUIVINZ.	K.0 FDD					10MHz:								
									R.3								
									FDD								
									20MHz:								
									R.6								
									FDD								
PCFICH/PDCCH/PHICH			5MHz: R					2.11 FDD				R.11 FDD				R.11 FDD	
parameters			10MHz:					R.6 FDD				R.6 FDD				R.6 FDD	
			20MHz: F					R.10 FDD	1			R.10 FDD				R.10 FDD	
OCNG Pattern defined			5MHz: Of			5MHz:	5MHz:	5MHz:	5MHz:			P.16 FDD				P.16 FDD	
in A.3.2.1			10MHz: O			OP.16	OP.16	OP.16	OP.20			OP.2 FDD				OP.2 FDD	
			20MHz: O	P.17 FDD)	FDD 10MHz:	FDD 10MHz:	FDD 10MHz:	FDD 10MHz:		20MHz: C)P.12 FDL	J		20MHZ: C)P.12 FDE)
						OP.2	OP.2	OP.2	OP.10								
						FDD	FDD	FDD	FDD								
						20MHz:	20MHz:	20MHz:	20MHz:								
						OP.12	OP.12	OP.12	OP.17								
						FDD	FDD	FDD	FDD								
PBCH_RA	dB																
PBCH_RB	dB																
PSS_RA	dB																
SSS_RA	dB																
PCFICH_RB	dB																
PHICH_RA	dB		,	1				1				0				0	
PHICH_RB	dB		(J			,	0				U				0	
PDCCH_RA	dB																
PDCCH_RB	dB																
PDSCH_RA	dB																
PDSCH_RB	dB																
OCNG_RA ^{Note 1}	dB																
OCNG_RB ^{Note 1}	dB																

$N_{oc}^{ m Note~3}$	dBm/15 kHz		-101			-101				-101							
\hat{E}_s/N_{oc}	dB	16	16	16	16	16	16	16	16	16	16	16	16	- Infinity	16	- Infinity	16
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	16	16	16	16	16	16	16	16	16	-0.11	16	-0.11	- Infinity	-0.11	- Infinity	-0.11
RSRP Note 4	dBm/15 kHz	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	- Infinity	-85	- Infinity	-85
SCH_RP Note 4	dBm/15 kHz	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	- Infinity	-85	- Infinity	-85
lo Note 3	dBm/Ch BW	-57.11 +10log (N _{RB,c} /50)	-54.15 +10log (N _{RB,c} /50)														
Propagation Condition			ÁW	'GN		,	ÁW	'GN		,	ÁW	GN			ÁW	'GN	
Antenna Configuration			1:	x2			1:	κ2			1>	(2			1)	x2	
Timing offset to Cell 1	μs			-			()			()			3	3	
Time alignment error relative to cell 1 Note 5	μs	-			≤ TAE			≤ TAE				N/A					
Time alignment error relative to cell 2 Note 5	μs	-			-			≤ TAE			N/A						

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission are assigned to the UE on cell1 from the start of time period T2 and on cell2 from the start of time period T4.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

A.8.16.33.2 Test Requirements

The UE shall send one Event A6 triggered measurement report, with a measurement reporting delay less than 25.6s (20×scellMeasCycle) from the beginning of time period T2.

The UE shall send one Event A6 triggered measurement report, with a measurement reporting delay less than 6.4s (5×scellMeasCycle) from the beginning of time period T4.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The UE shall be scheduled on PCell continuously throughout the test. From the start of T1 until the measurement report is received during T2, at least 99.5% of all expected ACK/NACKs shall be transmitted by the UE.

The UE shall be scheduled on Cell2 continuously from the beginning of T4 to the end. From the start of T4 until the measurement report is received during T4, at least 99.5% of all expected ACK/NACKs shall be transmitted by the UE.

For a test to be considered successful requirements on both event detection and percentage of transmitted ACK/NACKs have to be fulfilled simultaneously.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.16.34 E-UTRAN TDD 3 DL CA Event Triggered Reporting on Deactivated SCell with PCell and SCell Interruptions in Non-DRX

A.8.16.34.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects event A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] within the requirements stated in clause 8.3.3.2.1 while at the same time fulfilling the requirement on interruption rate.

The test parameters are given in Table A.8.16.34.1-1 and A.8.16.34.1-2 below. In the test there are four cells: Cell 1, Cell 2, Cell 3 and Cell 4. Cell 1 is PCell on the TDD primary component (RF Channel 1), Cell 2 is SCell on the TDD secondary component (RF Channel 2), and Cell 3 is SCell on the TDD secondary component (RF Channel 3) and Cell 4 is the neighbour cell on the TDD secondary component (RF Channel 3). It is indicated to the UE in the measurement control information that event-triggered reporting with Event A6 is used. The test consists of four successive time periods, with duration of T1, T2, T3 and T4, respectively. During T1 and T2, both Cell2 and Cell3 are deactivated. During T1 the UE shall not have any information of cell 4. Immediately at beginning of T2 the transmission power of cell 4 is increased to same level as for cell 3, and due to usage of an offset this shall result in reporting of Event A6.

At the beginning of T3, the transmission power of Cell 4 is turned off and the test equipment sends a MAC message for activation of Cell 2 to UE but Cell3 remains deactivated. Immediately at beginning of T4 the transmission power of cell 4 is increased to same level as for cell 3, and due to usage of an offset this shall result in reporting of Event A6. The UE shall be continuously scheduled in the PCell throughout the whole test and continuously scheduled in Cell 2 during T4.

Table A.8.16.34.1-1: General test parameters for E-UTRAN TDD 3 DL CA Event Triggered Reporting on Deactivated SCell with PCell and SCell interruptions in Non-DRX

	Parameter	Unit	Value	Comment
E-UT	RA RF Channel		1, 2, 3	three radio channels are used for this test
Num	ber		1, 2, 3	
Activ	e PCell		Cell 1	Primary cell on RF channel number 1.
Conf	igured deactivated		Cell 2	Configured deactivated secondary cell on
SCel			Gell 2	RF channel number 2.
Conf	igured deactivated		Cell 3	Configured deactivated secondary cell on
SCel			Oeli 3	RF channel number 3.
Neigl	nbour cell		Cell 4	Neighbor cell to be identified on RF
				channel number 3.
CP le			Normal	
	ial subframe		6	As specified in table 4.2-1 in TS 36.211.
	guration			The same configuration in both cells
	k-downlink		1	As specified in table 4.2-2 in TS 36.211.
	guration			The same configuration in both cells
DRX			OFF	Continuous monitoring of primary cell
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.
	Offset	dB		Offset parameter for evaluation of event
			-3	A6. Needs to take relative accuracy
			· ·	tolerance in clause 9.1.11.2 into account
				plus margin.
	Report on leave		False	
	Time To Trigger	S	0	
	ndividual offset for cells	dB	0	Individual offset for cells on primary
	F channel number 1			component carrier.
	individual offset for cells	dB	0	Individual offset for cells on secondary
	F channel number 2			component carrier.
	ndividual offset for cells	dB	0	Individual offset for cells on secondary
	F channel number 3			component carrier.
	coefficient		0	L3 filtering is not used
	I measurement cycle	ms	1280	
T1		S	5	During this time the UE shall be aware of
TC		_		cells 1, 2 and 3 but not cell 4.
T2		S	≤30	UE should report Event A6 within 25.6s
		_	4	(20xscellMeasCycle)
T3		S	1	During this time the UE shall activate cell 2
T4		S	≤10	UE should report Event A6 within 6.4s
				(5xscellMeasCycle)

Table A.8.16.34.1-2: Cell specific test parameters for E-UTRAN TDD 3 DL CA Event Triggered Reporting on Deactivated SCell with PCell and SCell interruptions in Non-DRX

Parameter	Unit		Ce	ell 1			Ce	ell 2			C	ell 3		Cell 4			
		T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4
E-UTRA RF				1				2				3				3	
Channel Number																	
BW _{channel}	MHz		5MHz: N					$N_{RB,c} = 25$			5MHz: I	$N_{RB,c} = 25$;			$N_{RB,c} = 25$	
			10MHz:					$N_{RB,c} = 50$				$N_{RB,c} = 50$				$N_{RB,c} = 50$	
			20MHz: N			20MHz: N _{RB,c} = 100				20MHz: N _{RB,c} = 100					20MHz: N _{RB,c} = 100		
PDSCH				R.4 TDE		N/A	N/A	N/A	5MHz:		1	N/A		N/A			
parameters:			10MHz: R.0 TDD 20MHz: R.3 TDD						R.4								
DL Reference			20MHz:	R.3 TDI)				TDD								
Measurement									10MHz								
Channel									: R.0								
									TDD								
									20MHz								
									: R.3 TDD								
PCFICH/PDCCH/P			5MHz: F	2 11 TD	`			<u> </u> R.11 TDD	טטון		5MU	R.11 TDD	\		5MU 0	R.11 TDD	
HICH parameters:			10MHz:					R.6 TDD				R.6 TDD				R.6 TDD	
DL Reference			20MHz:	_			-	R.10 TDD			-	R.10 TDE			-	R.10 TDD	
Measurement			ZUIVII IZ.	11.10 10	D		ZUIVII IZ.	11.10 100			ZUIVII IZ.	11.10 101	,		ZUIVII IZ.	11.10 100	
Channel																	
OCNG Pattern			5MHz: C	OP 9 TD	<u> </u>	5MHz:	5MHz:	5MHz:	5MHz:		5MHz: C	P.10 TDI)		5MHz: O	P.10 TDD	
defined in A.3.2.2			10MHz: (OP.10	OP.10	OP.10	OP.9			OP.2 TDI				OP.2 TDD	
			20MHz: (TDD	TDD	TDD	TDD			OP.8 TDI				OP.8 TDD	
			-			10MHz	10MHz	10MHz	10MHz		-				-		
						: OP.2	: OP.2	: OP.2	: OP.1								
						TDD	TDD	TDD	TDD								
						20MHz	20MHz	20MHz	20MHz								
						: OP.8	: OP.8	: OP.8	: OP.7								
						TDD	TDD	TDD	TDD								
PBCH_RA	dB	_															
PBCH_RB	dB	_															
PSS_RA	dB	_															
SSS_RA	dB																
PCFICH_RB	dB	_															
PHICH_RA	dB	_		0				0				^				^	
PHICH_RB	dB	_		0				0				0				0	
PDCCH_RA	dB	_															
PDCCH_RB	dB	_															
PDSCH_RA	dB	_															
PDSCH_RB	dB																
OCNG_RA ^{Note 1}	dB																

OCNG_RB ^{Note 1}	dB																	
$N_{oc}^{$	dBm/15 kHz		-1	01			-1	01					-1	01				
\hat{E}_s/N_{oc}	dB	16	16	16	16	16	16	16	16	16	16	16	16	-Infinity	16	-Infinity	16	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	16	16	16	16	16	16	16	16	16	-0.11	16	-0.11	-Infinity	-0.11	-Infinity	-0.11	
RSRP Note 4	dBm/15 kHz	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-Infinity	-85	-Infinity	-85	
SCH_RP Note 4	dBm/15 kHz	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-85	-Infinity	-85	-Infinity	-85	
lo ^{Note 3}	dBm/Ch BW	-57.11 +10log (N _{RB,c} /50)	-54.15 +10log (N _{RB,c} /50)															
Propagation Condition		,	ÁW	GN	,	AWGN				ÁW	GN		,	ÁW	'GN	,		
Antenna Configuration			1)	(2		1x2				1x2				1x2				
Timing offset to Cell 1	μs			-		0		0				3						
Time alignment error relative to cell 1 Note 5	μs			-		≤ TAE					≤ T	AE		N/A				
Time alignment error relative to cell 2 Note 5	μs	-				,	-		≤ TAE			N	/A					

1050

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission are assigned to the UE on cell1 prior to the start of time period T2 and on cell2 prior to the start of time period T4.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

A.8.16.34.2 Test Requirements

The UE shall send one Event A6 triggered measurement report, with a measurement reporting delay less than 25.6s (20×scellMeasCycle) from the beginning of time period T2.

The UE shall send one Event A6 triggered measurement report, with a measurement reporting delay less than 6.4s (5×scellMeasCycle) from the beginning of time period T4.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The UE shall be scheduled on PCell continuously throughout the test. From the start of T1 until the measurement report is received during T2, at least 99.5% of all expected ACK/NACKs shall be transmitted by the UE.

The UE shall be scheduled on Cell2 continuously from the start of T4 to the end. From the start of T4 until the measurement report is received during T4, at least 99.5% of all expected ACK/NACKs shall be transmitted by the UE.

For a test to be considered successful requirements on both event detection and percentage of transmitted ACK/NACKs have to be fulfilled simultaneously.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.16.35 3 DL PCell in FDD CA Activation and Deactivation of Known SCell in Non-DRX

A.8.16.35.1 Test Purpose and Environment

The purpose of this test is to verify that the SCell activation and deactivation times are within the requirements stated in section 7.7 for UE configured with two downlink SCells, when the SCell is known by the UE at the time of activation and PCell is in FDD.

The test parameters are given in Tables A.8.16.35.1-1 and cell-specific parameters in A.8.16.35.1-2 below. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. There are three carriers, each with one cell. All cells have constant signal levels throughout the test. Before the test starts the UE is connected to Cell 1 (PCell) on radio channel 1 (PCC) and deactivated Cell 3 (SCell2) on radio channel 3 (SCC2) but is not aware of Cell 2 (SCell1) on radio channel 2 (SCC1). The UE is only monitoring the PCC and SCC2. The UE shall be continuously scheduled in the PCell throughout the whole test.

At the beginning of T1 the UE receives an RRC message by which the SCell1 (Cell 2) becomes configured on radio channel 2 (SCC1). The UE now starts monitoring also the SCC1. The test equipment sends a MAC message for activation of the SCell1.

The point in time at which the MAC message is received at the UE antenna connector, in a subframe # denoted m which is an even number, defines the start of time period T2. At the beginning of T2 the test equipment sends a MAC message for activation of the SCell1. The UE receives the SCell2 activation command in a subframe (m+10) during activation of the SCell1. The UE shall be able to report valid CSI for the activated SCell1 at latest in subframe (m+29). The UE shall start reporting CSI for SCell1 in subframe (m+8) and shall report CQI index 0 (out-of-range) until the SCell activation has been completed. Any PCell interruption due to activation of SCells shall occur in the subframes (m+5) to (m+9) and (m+15) to (m+19).

Time period T3 starts when a MAC message for deactivation of SCell1, sent from the test equipment to the UE in a subframe # denoted n, is received at the UE antenna connector. The test equipment sends a MAC message for deactivation of the SCell2 in subframe (n+10). The UE shall carry out deactivation of the SCell1 at latest in subframe (n+8), and any PCell interruption due to the deactivation of SCells shall occur in the subframes (n+5) to (n+9) and (n+15) to (n+19).

The test equipment verifies that potential interruption is carried out in the correct time span by monitoring ACK/NACK sent in PCell during activation and deactivation of SCell1, respectively.

The test equipment verifies the activation time by counting the subframes from the time when the SCell1 activation command is sent until a CSI report with other than CQI index 0 is received.

The test equipment verifies the deactivation time by counting the subframes from the time when the SCell1 deactivation command is sent until CQI reporting for SCell1 is discontinued.

Table A.8.16.35.1-1: General test parameters for known SCell1 activation case

Parameter	Unit	Value	Comment
E-UTRA RF Channel		1, 2, 3	Three radio channels are used for this test
Number		1, 2, 0	
Active PCell		Cell 1	Primary cell on RF channel number 1.
Deconfigured deactivated		Cell 2	Deconfigured deactivated secondary cell
SCell1		Cell 2	on RF channel number 2.
Configured deactivated		Cell 3	Configured deactivated secondary cell on
SCell2		Cell 3	RF channel number 3.
CP length		Normal	
DRX		OFF	Continuous monitoring of primary cell
CQI/PMI periodicity and		0	CQI reporting for SCell every second
offset configuration index		O	subframe
Cell-individual offset for cells	dB	0	Individual offset for cells on PCC.
on RF channel number 1	uБ	U	
Cell-individual offset for cells	dB	0	Individual offset for cells on SCC1.
on RF channel number 2	uБ	O	
Cell-individual offset for cells	dB	0	Individual offset for cells on SCC2.
on RF channel number 3	uБ	O	
SCell measurement cycle	ms	320	
(measCycleSCell)	1113	320	
T1			During this time the PCell and SCell2 shall
	S	7	be known and the SCell1 configured and
			detected.
T2	s	1	During this time the UE shall activate the
	0	ļ	SCell1.
T3	S	1	During this time the UE shall deactivate
	3	ı	the SCell1.

Table A.8.16.35.1-2: Cell specific test parameters for E-UTRAN TDD known SCell1 activation with PCell in FDD

Parameter	Unit	Cell 1	Cell 2	Cell 3
		T1 T2 T3	T1 T2 T3	T1 T2 T3
E-UTRA RF Channel		1	2	3
Number				
BW _{channel}	MHz	5MHz: $N_{RB,c} = 25$	5MHz: N _{RB,c} = 25	5MHz: $N_{RB,c} = 25$
		$10MHz: N_{RB,c} = 50$	10MHz: $N_{RB,c} = 50$	$10MHz: N_{RB,c} = 50$
		$20MHz: N_{RB,c} = 100$	20MHz: N _{RB,c} = 100	20MHz: $N_{RB,c} = 100$
PDSCH parameters:		5MHz: R.7 FDD	-	-
DL Reference		10MHz: R.3 FDD		
Measurement Channel		20MHz: R.6 FDD		
PCFICH/PDCCH/PHIC		5MHz: R.11 FDD	5MHz: R.11 TDD	5MHz: R.11 TDD
H parameters:		10MHz: R.6 FDD	10MHz: R.6 TDD	10MHz: R.6 TDD
DL Reference		20MHz: R.10 FDD	20MHz: R.10 TDD	20MHz: R.10 TDD
Measurement Channel			-1411 OD 40 TDD	-1111 00 10 700
OCNG Patterns		5MHz: OP.20 FDD	5MHz: OP.10 TDD	5MHz: OP.10 TDD
		10MHz: OP.10 FDD	10MHz: OP.2 TDD 20MHz: OP.8 TDD	10MHz: OP.2 TDD 20MHz: OP.8 TDD
BBOLL BA	15	20MHz: OP.17 FDD	201VII 12. OI .0 100	201VII 12. OI .0 1DD
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	0	0	0
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
Noc Note 2	dBm/15	-104	-104	-104
<u> </u>	kHz			
Ê _s /N _{oc}	dB	17	17	17
Ê _s /I _{ot}	dB	17	17	17
RSRP Note 3	dBm/15	-87	-87	-87
COLL DD Note 3	kHz		07	~=
SCH_RP Note 3	dBm/15	-87	-87	-87
lo Note 3	kHz	50.40	50.40	50.10
10	dBm/Ch	-59.13	-59.13	-59.13
	BW	+10log	+10log	+10log
Dropogation Condition		(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)
Propagation Condition		AWGN	AWGN	AWGN
Antenna Configuration		1x2	1x2	1x2
Timing offset to Cell 1	μs	-	0	0
Time alignment error	μs	-	≤ TAE	≤ TAE
relative to cell 1 Note 5				. T^ =
Time alignment error	μs	-	-	≤ TAE
relative to cell 2 Note 5				

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.

Note 3: Es/lot, RSRP, SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: The uplink resources for CSI reporting are assigned to the UE prior to the start of time period T2.

Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

A.8.16.35.2 Test Requirements

During T2 the UE shall send the first CSI report for SCell1 in a subframe (m+8), or in a subframe (m+10) if the subframe (m+8) was subject to interruption. Whether CSI report in subframe (m+8) was interrupted or not is checked by monitoring ACK/NACK sent in PCell in subframe (m+8).

During T2 the UE shall start sending CSI reports for SCell1 with non-zero CQI index at latest in a subframe (m+29).

During T3 the UE shall stop sending CSI reports for SCell1 at latest in a subframe (n+8).

During T2 interruption of PCell during SCells activation shall not happen outside the subframes (m+5) to (m+9) and outside the subframes (m+15) to (m+19).

During T3 interruption of PCell during SCells deactivation shall not happen outside the subframes (n+5) to (n+9) and outside the subframes (n+15) to (n+19).

The interruption of PCell shall not be more than the values specified for intra-band CA and inter-band CA in Section 7.8.2.

All of the above test requirements shall be fulfilled in order for the observed SCell1 activation delay and SCell1 deactivation delay to be counted as correct. The rate of correct observed SCell1 activation delay and SCell1 deactivation delay during repeated tests shall be at least 90%.

NOTE: During T2 if there are no uplink resources for reporting the valid CSI in a subframe (m+29) then the UE shall use the next available uplink resource for reporting the corresponding valid CSI.

A.8.16.36 3 DL PCell in TDD CA Activation and Deactivation of Known SCell in Non-DRX

A.8.16.36.1 Test Purpose and Environment

The purpose of this test is to verify that the SCell activation and deactivation times are within the requirements stated in section 7.7 for UE configured with two downlink SCells, when the SCell is known by the UE at the time of activation and PCell is in TDD.

The test parameters are given in Tables A.8.16.36.1-1 and cell-specific parameters in A.8.16.36.1-2 below. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. There are three carriers, each with one cell. All cells have constant signal levels throughout the test. Before the test starts the UE is connected to Cell 1 (PCell) on radio channel 1 (PCC) and deactivated Cell 3 (SCell2) on radio channel 3 (SCC2) but is not aware of Cell 2 (SCell1) on radio channel 2 (SCC1). The UE is only monitoring the PCC and SCC2. The UE shall be continuously scheduled in the PCell throughout the whole test.

At the beginning of T1 the UE receives an RRC message by which the SCell1 (Cell 2) becomes configured on radio channel 2 (SCC1). The UE now starts monitoring also the SCC1. The test equipment sends a MAC message for activation of the SCell1.

The point in time at which the MAC message is received at the UE antenna connector, in a subframe # denoted m, where m is 4 or 9, defines the start of time period T2. At the beginning of T2 the test equipment sends a MAC message for activation of the SCell1. The UE receives the SCell2 activation command in a subframe (m+15) during activation of the SCell1. The UE shall be able to report valid CSI for the activated SCell1 at latest in a subframe (m+29). The UE shall start reporting CSI for SCell1 in subframe (m+8) and shall report CQI index 0 (out-of-range) until the SCell activation has been completed. Any PCell interruption due to activation of SCells shall occur in the subframes (m+5) to (m+11) and (m+20) to (m+26).

Time period T3 starts when a MAC message for deactivation of SCell1, sent from the test equipment to the UE in a subframe # denoted n, where n is 4 or 9, is received at the UE antenna connector. The test equipment sends a MAC message for deactivation of the SCell2 in subframe (n+15). The UE shall carry out deactivation of the SCell1 at latest in subframe (n+8), and any PCell interruption due to the deactivation of SCells shall occur in the subframes (n+5) to (n+11) and (n+20) to (n+26).

The test equipment verifies that potential interruption is carried out in the correct time span by monitoring ACK/NACK sent in PCell during activation and deactivation of SCell1, respectively.

The test equipment verifies the activation time by counting the subframes from the time when the SCell1 activation command is sent until a CSI report with other than CQI index 0 is received.

The test equipment verifies the deactivation time by counting the subframes from the time when the SCell1 deactivation command is sent until CQI reporting for SCell1 is discontinued.

Table A.8.16.36.1-1: General test parameters for known SCell1 activation case

Parameter	Unit	Value	Comment
E-UTRA RF Channel Number		1, 2, 3	Three radio channels are used for this test
Active PCell		Cell 1	Primary cell on RF channel number 1.
Deconfigured deactivated SCell		Cell 2	Deconfigured deactivated secondary cell on RF channel number 2.
Configured deactivated SCell2		Cell 3	Configured deactivated secondary cell on RF channel number 3.
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2.1 in TS 36.211. The same configuration applies to all cells.
Uplink-downlink configuration		1	
DRX		OFF	Continuous monitoring of primary cell
CQI/PMI periodicity and offset configuration index		0	CQI reporting for SCell every UL subframe
Cell-individual offset for cells on RF channel number 1	dB	0	Individual offset for cells on PCC.
Cell-individual offset for cells on RF channel number 2	dB	0	Individual offset for cells on SCC1.
Cell-individual offset for cells on RF channel number 3	dB	0	Individual offset for cells on SCC1.
SCell measurement cycle (measCycleSCell)	ms	320	
T1	S	7	During this time the PCell and SCell2 shall be known and the SCell1 configured and detected.
T2	S	1	During this time the UE shall activate the SCell1.
Т3	S	1	During this time the UE shall deactivate the SCell1.

Table A.8.16.36.1-2: Cell specific test parameters for E-UTRAN FDD known SCell1 activation with PCell in TDD

Parameter	Unit	Cell 1		Cell 2			Cell 3		
	-	T1 T2	T3	T1	T2	Т3	T1	T2	Т3
E-UTRA RF Channel		1			2			3	
Number		1			2				
BW _{channel}	MHz	5MHz: N _{RB,c} =	25	5MH	z: N _{RB,c} = 2	5	5MF	Iz: N _{RB,c} =	: 25
		$10MHz: N_{RB,c} =$		10MF	$Iz: N_{RB,c} = $	50	10MHz: $N_{RB,c} = 50$		
		20MHz: $N_{RB,c} = 100$ 20MHz: $N_{RB,c} = 100$			20MHz: $N_{RB,c} = 100$				
PDSCH parameters:		5MHz: R.4 TDI	D		-			-	
DL Reference		10MHz: R.0 TD							
Measurement Channel		20MHz: R.3 TD	D						
PCFICH/PDCCH/PHIC		5MHz: R.11 TI	DD	5MHz: R.11 FDD			5MH	lz: R.11 F	DD
H parameters:		10MHz: R.6 TDD		10MHz: R.6 FDD			10N	1Hz: R.6 F	DD
DL Reference		20MHz: R.10 T	DD	20MHz: R.10 FDD			20M	Hz: R.10 I	-DD
Measurement Channel									
OCNG Patterns		5MHz: OP.9 TD			:: OP.16 FE		5MH	z: OP.16	FDD
		10MHz: OP.1 TDD		10MHz: OP.2 FDD			_	Hz: OP.2	
		20MHz: OP.7 TI	DD	20MHz: OP.12 FDD			20MF	lz: OP.12	FDD
PBCH_RA	dB								
PBCH_RB	dB								
PSS_RA	dB								
SSS_RA	dB								
PCFICH_RB	dB								
PHICH_RA	dB								
PHICH_RB	dB	0		0				0	
PDCCH_RA	dB								
PDCCH_RB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG_RA ^{Note 1}	dB								
OCNG_RB ^{Note 1}	dB								
Noc Note 2	dBm/15 kHz	-104			-104			-104	
Ê _s /N _{oc}	dB	17			17			17	
Ês/lat	dB	17			17			17	
RSRP Note 3	dBm/15 kHz	-87			-87			-87	
SCH_RP Note 3	dBm/15 kHz	-87			-87			-87	
lo Note 3	dBm/Ch BW	-59.13			-59.13			-59.13	
		+10log			+10log			+10log	
		(N _{RB,c} /50)		(1	N _{RB,c} /50)		((N _{RB,c} /50)	
Propagation Condition		AWGN			AWGN		,	AWGN	
Antenna Configuration		1x2			1x2			1x2	
Timing offset to Cell 1	μS	-			0			0	
Time alignment error	μς	-			≤ TAE			≤ TAE	
relative to cell 1 Note 5	μο			≥ IAE			- 17.2		
Time alignment error	μS	-			-			≤ TAE	
relative to cell 2 Note 5	μο								
N 4 4 60NG 1 111						*** 1	·		

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

A.8.16.36.2 Test Requirements

During T2 the UE shall send the first CSI report for SCell1 in a subframe (m+8,) or in a subframe (m+9) if the subframe (m+8) was subject to interruption. Whether CSI report in subframe (m+8) was interrupted or not is checked by monitoring ACK/NACK sent in PCell in subframe (m+8).

During T2 the UE shall start sending CSI reports for SCell1 with non-zero CQI index at latest in a subframe (m+29).

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.

Note 3: Es/lot, RSRP, SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: The uplink resources for CSI reporting are assigned to the UE prior to the start of time period T2.

Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

During T3 the UE shall stop sending CSI reports for SCell at latest in a subframe (n+8).

During T2 interruption of PCell during SCells activation shall not happen outside the subframes (m+5) to (m+11) and outside the subframes (m+20) to (m+26).

During T3 interruption of PCell during SCells deactivation shall not happen outside the subframes (n+5) to (n+11) and outside the subframes (n+20) to (n+26).

The interruption of PCell shall not be more than the values specified for intra-band CA and inter-band CA in Section 7.8.2.

All of the above test requirements shall be fulfilled in order for the observed SCell1 activation delay and SCell1 deactivation delay to be counted as correct. The rate of correct observed SCell1 activation delay and SCell1 deactivation delay during repeated tests shall be at least 90%.

NOTE: During T2 if there are no uplink resources for reporting the valid CSI in a subframe (m+29) then the UE shall use the next available uplink resource for reporting the corresponding valid CSI.

A.8.16.37 3 DL FDD CA activation and deactivation of known SCell in non-DRX

A.8.16.37.1 Test Purpose and Environment

The purpose of this test is to verify that SCell activation and deactivation times are within the requirements stated in clause 7.7 for 3DL FDD carrier aggregation, when the SCells are known by the UE at the time of activation.

The test parameters are given in Tables A.8.16.37-1 and cell-specific parameters in A.8.16.37-2 below. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. There are three carriers, each with one cell. All cells have constant signal levels throughout the test. Before the test starts the UE is connected to Cell 1 (PCell) on radio channel 1 (PCC) and Cell 3 (deactivated SCell2) on radio channel 3 (SCC2), but is not aware of Cell 2 (SCell1) on radio channel 2 (SCC1). The UE is only monitoring the PCC and SCC2. The UE shall be continuously scheduled in the PCell throughout the whole test.

At the beginning of T1 the UE receives an RRC message by which the SCell1 (Cell 2) becomes configured on radio channel 2 (SCC1). The UE now starts monitoring also the SCC1. The test equipment sends a MAC message for activation of the SCell1.

The point in time at which the MAC message is received at the UE antenna connector, in a subframe # denoted m which is an even number, defines the start of time period T2. At the beginning of T2 the test equipment sends a MAC message for activation of the SCell1. The UE receives the SCell2 activation command in a subframe (m+10) during activation of the SCell1. The UE shall be able to report valid CSIs for the activated SCell1 at latest in asubframe (m+29). The UE shall start reporting CSI for SCell1 in subframe in (m+8) and shall report CQI index 0 (out-of-range) until the SCell activation has been completed. Any PCell interruption due to activation of SCells shall occur in the subframes (m+5) to (m+9ms) and (m+15) to (m+19).

Time period T3 starts when a MAC message for deactivation of SCell1, sent from the test equipment to the UE in a subframe # denoted n, is received at the UE antenna connector. The test equipment sends a MAC message for deactivation of the SCell2 in subframe (n+10). The UE shall carry out deactivation of the SCell1 at latest in subframe (n+8), and any PCell interruption due to the deactivation of SCells shall occur in the subframes (n+5) to (n+9) and (n+15) to (n+19).

The test equipment verifies that potential interruption is carried out in the correct time span by monitoring ACK/NACK sent in PCell during activation and deactivation of SCells, respectively.

The test equipment verifies the activation time by counting the subframes from the time when the SCell1 activation command is sent until a CSI report with other than CQI index 0 is received.

The test equipment verifies the deactivation time by counting the subframes from the time when the SCell1 deactivation command is sent until CQI reporting for SCell1 is discontinued.

Table A.8.16.37-1: General test parameters for E-UTRAN FDD 3 DL CA activation and deactivation of known SCell in non-DRX

Parameter	Unit	Value	Comment
E-UTRA RF Channel		1, 2, 3	Three radio channels are used for this test
Number			
Active PCell		Cell 1	Primary cell on RF channel number 1.
Deconfigured SCell		Cell 2	Deconfigured secondary cell on RF
			channel number 2.
Configured deactivated		Cell 3	Configured deactivated secondary cell on
SCell			RF channel number 3.
CP length		Normal	
DRX		OFF	Continuous monitoring of primary cell
CQI/PMI periodicity and		0	CQI reporting for SCells every second
offset configuration index		U	subframe
Cell-individual offset for cells	dB	0	Individual offset for cells on PCC.
on RF channel number 1			
Cell-individual offset for cells	dB	0	Individual offset for cells on SCC1.
on RF channel number 2			
Cell-individual offset for cells	dB	0	Individual offset for cells on SCC2.
on RF channel number 3			
Filter coefficient		0	L3 filtering is not used
SCell measurement cycle	ms	320	
(measCycleSCell)			
T1	S	7	During this time the PCell and SCell2 shall
			be known and the SCell1 configured and
			detected.
T2	S	1	During this time the UE shall activate the
			SCell1 and SCell2.
T3	S	1	During this time the UE shall deactivate
			the SCell1 and SCell2.

Table A.8.16.37-2: Cell specific test parameters for E-UTRAN FDD 3 DL CA activation and deactivation of known SCell in non-DRX

Parameter	Unit	Cell 1	Cell 2	Cell 3		
		T1 T2 T3	T1 T2 T3	T1 T2 T3		
E-UTRA RF Channel		1	2	3		
Number						
BW _{channel}		5MHz: $N_{RB,c} = 25$	5MHz: $N_{RB,c} = 25$	5MHz: $N_{RB,c} = 25$		
		$10MHz: N_{RB,c} = 50$	$10MHz: N_{RB,c} = 50$	10MHz: $N_{RB,c} = 50$		
		$20MHz: N_{RB,c} = 100$	20MHz: N _{RB,c} = 100	20MHz: $N_{RB,c} = 100$		
PDSCH parameters:		5MHz: R.7 FDD	-	-		
DL Reference		10MHz: R.3 FDD				
Measurement Channel		20MHz: R.6 FDD				
PCFICH/PDCCH/PHICH		5MHz: R.11 FDD	5MHz: R.11 FDD	5MHz: R.11 FDD		
parameters:		10MHz: R.6 FDD	10MHz: R.6 FDD	10MHz: R.6 FDD		
DL Reference		20MHz: R.10 FDD	20MHz: R.10 FDD	20MHz: R.10 FDD		
Measurement Channel						
OCNG Patterns		5MHz: OP.20 FDD	5MHz: OP.16 FDD	5MHz: OP.16 FDD		
		10MHz: OP.10 FDD	10MHz: OP.2 FDD	10MHz: OP.2 FDD		
DDOLL DA	in the	20MHz: OP.17 FDD	20MHz: OP.12 FDD	20MHz: OP.12 FDD		
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB	_	_	_		
PHICH_RB	dB	0	0	0		
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
Noc Note 2	dBm/15 kHz	-104	-104	-104		
Ê _s /N _{oc}	dB	17	17	17		
Ê _S /I _o Note 3	dB	17	17	17		
RSRP 1000 0	dBm/15 kHz	-87	-87	-87		
SCH_RP Note 3	dBm/15 kHz	-87	-87	-87		
lo Note 3	dBm/Ch BW	-59.13+10log	-59.13+10log	-59.13+10log		
		(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)		
Propagation Condition		AWGN	AWGN	AWGN		
Antenna Configuration		1x2	1x2	1x2		
Timing offset to Cell 1	μs	-	0	0		
Time alignment error	μs	-	≤ TAE	≤TAE		
relative to cell 1 Note 5	·					
Time alignment error	μs	-	-	≤ TAE		
relative to cell 2 Note 5						
Note 1. OCNC shall be		II aalla ava fullu allaaata	d amal a annatamt tatal tuama			

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

A.8.16.37.2 Test Requirements

During T2 the UE shall send the first CSI report for SCell1 in a subframe (m+8), or in a subframe (m+10) if the subframe (m+8) was subject to interruption. Whether CSI report in subframe (m+8) was interrupted or not is checked by monitoring ACK/NACK sent in PCell in subframe (m+8).

During T2 the UE shall start sending CSI reports for SCell1 with non-zero CQI index at latest in a subframe (m+29).

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: E_s/I_{ot}, RSRP, SCH_RP and Io have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: The uplink resources for CSI reporting are assigned to the UE prior to the start of time period T2.

Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

During T3 the UE shall stop sending CSI reports for SCell1 at latest in a subframe (n+8).

During T2 interruption of PCell during SCells activation shall not happen outside the subframes (m+5) to (m+9) and outside the subframes (m+15) to (m+19).

During T3 interruption of PCell during SCells deactivation shall not happen outside the subframes (n+5) to (n+9) and outside the subframes (n+15) to (n+19).

The interruption of PCell shall not be more than the values specified for intra-band CA and inter-band CA in Section 7.8.2.

All of the above test requirements shall be fulfilled in order for the observed SCell1 activation delay and SCell1 deactivation delay to be counted as correct. The rate of correct observed SCell1 activation delay and SCell1 deactivation delay during repeated tests shall be at least 90%.

NOTE: During T2 if there are no uplink resources for reporting the valid CSI in a subframe (m+29) then the UE shall use the next available uplink resource for reporting the corresponding valid CSI.

A.8.16.38 3 DL TDD CA activation and deactivation of known SCell in non-DRX

A.8.16.38.1 Test Purpose and Environment

The purpose of this test is to verify that SCell activation and deactivation times are within the requirements stated in clause 7.7 for 3DL TDD carrier aggregation, when the SCells are known by the UE at the time of activation.

The test parameters are given in Tables A.8.16.38-1 and cell-specific parameters in A.8.16.38-2 below. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. There are three carriers, each with one cell. All cells have constant signal levels throughout the test. Before the test starts the UE is connected to Cell 1 (PCell) on radio channel 1 (PCC) and Cell 3 (deactivated SCell2) on radio channel 3 (SCC2), but is not aware of Cell 2 (SCell1) on radio channel 2 (SCC1). The UE is only monitoring the PCC and SCC2. The UE shall be continuously scheduled in the PCell throughout the whole test.

At the beginning of T1 the UE receives an RRC message by which the SCell1 (Cell 2) becomes configured on radio channel 2 (SCC1). The UE now starts monitoring also the SCC1. The test equipment sends a MAC message for activation of the SCell1.

The point in time at which the MAC message is received at the UE antenna connector, in a subframe # denoted m, where m is 4 or 9, defines the start of time period T2. At the beginning of T2 the test equipment sends a MAC message for activation of the SCell1. The UE receives the SCell2 activation command in a subframe (m+15) during activation of the SCell1. The UE shall be able to report valid CSIs for the activated SCell1 at latest in a subframe (m+29). The UE shall start reporting CSI for SCell1 for SCell1 in subframe (m+8) and shall report CQI index 0 (out-of-range) until the SCell activation has been completed. Any PCell interruption due to activation of SCells shall occur in the subframes (m+5) to (m+11) and (m+20) to (m+26).

Time period T3 starts when a MAC message for deactivation of SCell1, sent from the test equipment to the UE, in a subframe # denoted n, where n is 4 or 9, is received at the UE antenna connector. The test equipment sends a MAC message for deactivation of the SCell2 in subframe (n+15). The UE shall carry out deactivation of the SCell1 at latest in subframe (n+8), and any PCell interruption due to the deactivation of SCells shall occur in the subframes (n+5) to (n+11) and (n+20) to (n+26).

The test equipment verifies that potential interruption is carried out in the correct time span by monitoring ACK/NACK sent in PCell during activation and deactivation of SCells, respectively.

The test equipment verifies the activation time by counting the subframes from the time when the SCell1 activation command is sent until a CSI report with other than CQI index 0 is received.

The test equipment verifies the deactivation time by counting the subframes from the time when the SCell1 deactivation command is sent until CQI reporting for SCell1 is discontinued.

Table A.8.16.38-1: General test parameters for E-UTRAN TDD 3 DL CA activation and deactivation of known SCell in non-DRX

Parameter	Unit	Value	Comment
E-UTRA RF Channel		1, 2, 3	Three radio channels are used for this test
Number			
Active PCell		Cell 1	Primary cell on RF channel number 1.
Deconfigured SCell		Cell 2	Deconfigured secondary cell on RF channel number 2.
Configured deactivated SCell		Cell 3	Configured deactivated secondary cell on RF channel number 3.
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration applies to all cells.
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211. The same configuration applies to all cells
DRX		OFF	Continuous monitoring of primary cell
CQI/PMI periodicity and offset configuration index		0	CQI reporting for SCells every UL subframe
Cell-individual offset for cells on RF channel number 1	dB	0	Individual offset for cells on PCC.
Cell-individual offset for cells on RF channel number 2	dB	0	Individual offset for cells on SCC1.
Cell-individual offset for cells on RF channel number 3	dB	0	Individual offset for cells on SCC2.
Filter coefficient		0	L3 filtering is not used
SCell measurement cycle (measCycleSCell)	ms	320	
T1	S	7	During this time the PCell and SCell2 shall be known and the SCell1 configured and detected.
T2	S	1	During this time the UE shall activate the SCell1 and SCell2.
Т3	S	1	During this time the UE shall deactivate the SCell1 and SCell2

Table A.8.16.38-2: Cell specific test parameters for E-UTRAN TDD 3 DL CA activation and deactivation of known SCell in non-DRX

Parameter	Unit	Cell 1	Cell 2	Cell 3
		T1 T2 T3	T1 T2 T3	T1 T2 T3
E-UTRA RF Channel Number		1	2	3
BW _{channel}		5MHz: N _{RB,c} = 25	5MHz: N _{RB,c} = 25	5MHz: N _{RB,c} = 25
Dvv channel		10MHz: $N_{RB,c} = 50$	10MHz: $N_{RB,c} = 50$	10MHz: $N_{RB,c} = 50$
		20MHz: $N_{RB,c} = 100$	20MHz: N _{RB,c} = 100	20MHz: N _{RB,c} = 100
PDSCH parameters:		5MHz: R.4 TDD		
DL Reference		10MHz: R.0 TDD		
Measurement Channel		20MHz: R.3 TDD		
PCFICH/PDCCH/PHICH		5MHz: R.11 TDD	5MHz: R.11 TDD	5MHz: R.11 TDD
parameters:		10MHz: R.6 TDD	10MHz: R.6 TDD	10MHz: R.6 TDD
DL Reference		20MHz: R.10 TDD	20MHz: R.10 TDD	20MHz: R.10 TDD
Measurement Channel				
OCNG Patterns		5MHz: OP.9 TDD	5MHz: OP.10 TDD	5MHz: OP.10 TDD
		10MHz: OP.1 TDD	10MHz: OP.2 TDD	10MHz: OP.2 TDD
	<u> </u>	20MHz: OP.7 TDD	20MHz: OP.8 TDD	20MHz: OP.8 TDD
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB			
PHICH_RB	dB	0	0	0
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
Noc Note 2	dBm/15 kHz	-104	-104	-104
Ê _s /N _{oc}	dB	17	17	17
Ê _s /I _{ot} Note 3	dB	17	17	17
RSRP Note 3	dBm/15 kHz	-87	-87	-87
SCH_RP Note 3	dBm/15 kHz	-87	-87	-87
lo Note 3	dBm/Ch BW	-59.13+10log	-59.13+10log	-59.13+10log
		(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)
Propagation Condition		AWGN	AWGN	AWGN
Antenna Configuration		1x2	1x2	1x2
Timing offset to Cell 1	μs	-	0	0
Time alignment error relative to cell 1 Note 5	μs	-	≤ TAE	≤ TAE
Time alignment error relative to cell 2 Note 5	μѕ	-	-	≤ TAE
Note 1. OCNC shall be		II II		'

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

A.8.16.38.2 Test Requirements

During T2 the UE shall send the first CSI report for SCell1 in a subframe (m+8), or in a subframe (m+9) if the subframe (m+8) was subject to interruption, or in a subframe (m+13) if the subframe (m+8) and (m+9) were subject to interruption when an intra-band SCell is actitivated. Whether CSI report in subframe (m+8) and/or (m+9) was interrupted or not is checked by monitoring ACK/NACK sent in PCell in subframe (m+8) and/or (m+9).

During T2 the UE shall start sending CSI reports for SCell1 with non-zero CQI index at latest in a subframe (m+29).

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.

Note 3: E_s/I_{ot}, RSRP, SCH_RP and Io have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: The uplink resources for CSI reporting are assigned to the UE prior to the start of time period T2.

Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

During T3 the UE shall stop sending CSI reports for SCell1 at latest in subframe (n+8).

During T2 interruption of PCell during SCells activation shall not happen outside the subframes (m+5) to (m+11) and outside the subframes (m+20) to (m+26).

During T3 interruption of PCell during SCells deactivation shall not happen outside the subframes (n+5) to (n+11) and outside the subframes (n+20) to (n+26).

The interruption of PCell shall not be more than the values specified for intra-band CA and inter-band CA in Section 7.8.2.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

All of the above test requirements shall be fulfilled in order for the observed SCell1 activation delay and SCell1 deactivation delay to be counted as correct. The rate of correct observed SCell1 activation delay and SCell1 deactivation delay during repeated tests shall be at least 90%.

NOTE: During T2 if there are no uplink resources for reporting the valid CSI in a subframe (m+29) then the UE shall use the next available uplink resource for reporting the corresponding valid CSI.

A.8.16.39 E-UTRA TDD-FDD 3DL CA Activation and Deactivation of Unknown SCell in Non-DRX with PCell in FDD

A.8.16.39.1 Test Purpose and Environment

The purpose of this test is to verify that the SCell activation and deactivation times are within the requirements stated in section 7.7 for UE configured with two downlink SCells, when the SCell is unknown by the UE at the time of activation.

The test parameters are given in Tables A.8.16.39.1-1 and cell-specific parameters in A.8.16.39.1-2 below. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. There are three carriers, each with one cell. Cell 1 is FDD cell, and Cell 2 and Cell 3 are TDD cells. Cell 1 and Cell 3 have constant signal levels throughout the test. Before the test starts the UE is connected to Cell 1 (PCell) on radio channel 1 (PCC) and Cell 3 (deactivated SCell2) on radio channel 3 (SCC2) but is not aware of Cell 2 (SCell1) on radio channel 2 (SCC1). The UE is only monitoring the PCC and SCC2. The UE shall be continuously scheduled in the PCell throughout the whole test.

At the beginning of T1 the UE receives an RRC message by which the Cell 2 (SCell1) becomes configured on radio channel 2 (SCC1). During T1 Cell 2 (SCell1) is powered off and UE is not aware of Cell 2 (SCell1).

A MAC message for activation of SCell1 is sent by the test equipment 100ms after the RRC message, in a subframe # denoted m. The point in time at which the MAC message for activation of Cell 2 (SCell1) is received at the UE antenna connector defines the start of time period T2. Immediately at beginning of T2 the transmission power of Cell 2 (SCell1) is increased to same level as for Cell 1 (PCell). The test equipment sends a MAC message for activation of the Cell 3 (SCell2) in subframe (m+10). Since UE received SCell2 activation command during activation of SCell1, the UE shall be able to report valid CSI for the activated SCell1 at latest in subframe (m+39) provided the SCell1 can be successfully detected on the first attempt. The UE shall start reporting CSI for SCell1 already in subframe (m+8), and shall report CQI index 0 (out-of-range) until the SCell activation has been completed. Any PCell interruption due to activation of SCells shall occur in the subframes (m+5) to (m+9) and (m+15) to (m+19).

Time period T3 starts when a MAC message for deactivation of Cell 2 (SCell1), sent from the test equipment to the UE, in a subframe # denoted n, is received at the UE antenna connector. The test equipment sends a MAC message for deactivation of the Cell 3 (SCell2) in subframe (n+10). The UE shall carry out deactivation of the Cell 2 (SCell1) at latest in subframe (n+8), and any PCell interruption due to the deactivation of SCells shall occur in subframes (n+5) to (n+9) and (n+10) to (n+19).

The test equipment verifies that potential interruption is carried out in the correct time span by monitoring ACK/NACK sent in PCell during activation and deactivation of SCell1, respectively.

The test equipment verifies the activation time by counting the subframes from the time when the Cell 2 (SCell1) activation command is sent until a CSI report with other than CQI index 0 is received.

The test equipment verifies the deactivation time by counting the subframes from the time when the Cell 2 (SCell1) deactivation command is sent until CQI reporting for SCell1 is discontinued.

Table A.8.16.39.1-1: General test parameters for unknown SCell1 activation case

Parameter	Unit	Value	Comment
E-UTRA RF Channel		1, 2, 3	Three radio channels are used for this test
Number Active PCell		Cell 1	Primary cell on RF channel number 1.
Deconfigured deactivated SCell1		Cell 2	Deconfigured deactivated secondary cell on RF channel number 2.
Configured deactivated SCell2		Cell 3	Configured deactivated secondary cell on RF channel number 3.
CP length		Normal	
DRX		OFF	Continuous monitoring of primary cell
CQI/PMI periodicity and offset configuration index		0	CQI reporting for SCell every second subframe
Cell-individual offset for cells on RF channel number 1	dB	0	Individual offset for cells on PCC.
Cell-individual offset for cells on RF channel number 2	dB	0	Individual offset for cells on SCC1.
Cell-individual offset for cells on RF channel number 3	dB	0	Individual offset for cells on SCC2.
SCell measurement cycle (measCycleSCell)	ms	320	
T1	ms	100	During this time the PCell and SCell2 shall be known and the SCell1 configured.
T2	S	1	During this time the UE shall activate the SCell1 and SCell2.
Т3	S	1	During this time the UE shall deactivate the SCell1 and SCell2.

Note: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.39.1-2: Cell specific test parameters for E-UTRAN TDD known SCell1 activation with PCell in FDD

Parameter	Unit	Cell 1		Cell 2	Cell 3
		T1 T2 T3	T1	T2 T3	T1 T2 T3
E-UTRA RF Channel Number		1	2		3
TDD special subframe configuration		-		6	6
TDD uplink-downlink configuration		-		1	1
BW _{channel}	MHz	5MHz: N _{RB,c} = 25	5ME	Hz: N _{RB,c} = 25	5MHz: N _{RB,c} = 25
S . Glanie	2	10MHz: $N_{RB,c} = 50$ 20MHz: $N_{RB,c} = 100$	10MI	Hz: $N_{RB,c} = 50$ Hz: $N_{RB,c} = 100$	10MHz: $N_{RB,c} = 50$ 20MHz: $N_{RB,c} = 100$
PDSCH parameters:		5MHz: R.7 FDD		-	-
DL Reference		10MHz: R.3 FDD			
Measurement Channel		20MHz: R.6 FDD			
PCFICH/PDCCH/PHIC		5MHz: R.11 FDD		lz: R.11 TDD	5MHz: R.11 TDD
H parameters:		10MHz: R.6 FDD		IHz: R.6 TDD	10MHz: R.6 TDD
DL Reference		20MHz: R.10 FDD	20MI	Hz: R.10 TDD	20MHz: R.10 TDD
Measurement Channel		ENIL OD 00 EDD	5 N 41 I	OD 40 TDD	51411 OD 40 TDD
OCNG Patterns		5MHz: OP.20 FDD		z: OP.10 TDD	5MHz: OP.10 TDD
		10MHz: OP.10 FDD 20MHz: OP.17 FDD		Hz: OP.2 TDD Hz: OP.8 TDD	10MHz: OP.2 TDD 20MHz: OP.8 TDD
PBCH_RA	dB		20.711	00 ,00	202. 31 10 122
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0		0	0
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1} Noc Note 2	dB	404		404	404
	dBm/15 kHz	-104		-104	-104
Ê _s /N _{oc}	dB	17	-infinity	17	17
Ê _s /I _{ot}	dB	17	-infinity	17	17
RSRP Note 3	dBm/15 kHz	-87	-infinity	-87	-87
SCH_RP Note 3	dBm/15 kHz	-87	-infinity	-87	-87
lo Note 3	dBm/Ch	-59.13	-76.22	-59.13	-59.13
	BW	+10log	+10log	+10log	+10log
		(N _{RB,c} /50) (N _{RB,c} /50) (N _{RB,c} /50)		(N _{RB,c} /50)	
Propagation Condition		AWGN	AWGN		AWGN
Antenna Configuration		1x2		1x2	1x2
Timing offset to Cell 1	μs	-		0	0
Time alignment error relative to cell 1 Note 5	μs	-		≤ TAE	≤ TAE
Time alignment error relative to cell 2 Note 5	μs	-		-	≤ TAE

- Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.
- Note 3: Es/lot, RSRP, SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 4: The uplink resources for CSI reporting are assigned to the UE prior to the start of time period T2.
- Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.
- Note 6: TDD special subframe configuration and uplink-downlink configuration are as specified in Table 4.2-1 and 4.2-2 in TS36.211 [16]. The same configuration applies to all TDD cells.

A.8.16.39.2 Test Requirements

During T2 the UE shall send the first CSI report for SCell1 at latest in a subframe (m+8), or in a subframe (m+10) if the subframe (m+8) was subject to interruption. Whether CSI report in subframe (m+8) was interrupted or not is checked by monitoring ACK/NACK sent in PCell in subframe (m+8).

During T2 the UE shall start sending CSI reports for SCell1 with non-zero CQI index at latest in a subframe (m+39).

During T3 the UE shall stop sending CSI reports for SCell1 at latest in a subframe (n+8).

During T2interruption of PCell during SCells activation shall not happen outside subframes (m+5) to (m+9) and outside the subframes (m+15) to (m+19).

During T3iInterruption of PCell during SCells deactivation shall not happen outside subframes (n+5) to (n+9) and outside subframes (n+15) to (n+19).

The interruption of PCell shall not be more than the values specified for intra-band CA and inter-band CA in Section 7.8.2.

All of the above test requirements shall be fulfilled in order for the observed SCell1 activation delay and SCell1 deactivation delay to be counted as correct. The rate of correct observed SCell1 activation delay and SCell1 deactivation delay during repeated tests shall be at least 90%.

NOTE: During T2 if there are no uplink resources for reporting the valid CSI in a subframe (m+39) then the UE shall use the next available uplink resource for reporting the corresponding valid CSI.

A.8.16.40 E-UTRA TDD-FDD 3DL CA Activation and Deactivation of Unknown SCell in Non-DRX with PCell in TDD

A.8.16.40.1 Test Purpose and Environment

The purpose of this test is to verify that the SCell activation and deactivation times are within the requirements stated in section 7.7 for UE configured with two downlink SCells, when the SCell is unknown by the UE at the time of activation.

The test parameters are given in Tables A.8.16.40.1-1 and cell-specific parameters in A.8.16.40.1-2 below. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. There are three carriers, each with one cell. Cell 1 is TDD cell, and Cell 2 and Cell 3 are FDD cells. Cell 1 and Cell 3 have constant signal levels throughout the test. Before the test starts the UE is connected to Cell 1 (PCell) on radio channel 1 (PCC) and Cell 3 (deactivated SCell2) on radio channel 3 (SCC2) but is not aware of Cell 2 (SCell1) on radio channel 2 (SCC1). The UE is only monitoring the PCC and SCC2. The UE shall be continuously scheduled in the PCell throughout the whole test.

At the beginning of T1 the UE receives an RRC message by which the Cell 2 (SCell1) becomes configured on radio channel 2 (SCC1). During T1 Cell 2 (SCell1) is powered off and UE is not aware of Cell 2 (SCell1).

A MAC message for activation of SCell1 is sent by the test equipment 100ms after the RRC message, in a subframe # denoted m, where m is 4 or 9. The point in time at which the MAC message for activation of Cell 2 (SCell1) is received at the UE antenna connector defines the start of time period T2. Immediately at beginning of T2 the transmission power of Cell 2 (SCell1) is increased to same level as for Cell 1 (PCell). The test equipment sends a MAC message for activation of the Cell 3 (SCell2) in subframe (m+15). Since UE received SCell2 activation command during activation

of SCell1, the UE shall be able to report valid CSI for the activated SCell1 at latest in subframe (m+39) provided the SCell1 can be successfully detected on the first attempt. The UE shall start reporting CSI for SCell1 already in subframe (m+8), and shall report CQI index 0 (out-of-range) until the SCell activation has been completed. Any PCell interruption due to activation of SCells shall occur in subframes (m+5) to (m+9) and (m+20) to (m+24).

Time period T3 starts when a MAC message for deactivation of Cell 2 (SCell1), sent from the test equipment to the UE in a subframe # denoted n, where n is 4 or 9, is received at the UE antenna connector. The test equipment sends a MAC message for deactivation of the Cell 3 (SCell2) in subframe (n+15). The UE shall carry out deactivation of the Cell 2 (SCell1) at latest in subframe (n+8), and any PCell interruption due to the deactivation of SCells shall occur in subframes (n+5) to (n+9) and (n+20) to (n+24).

The test equipment verifies that potential interruption is carried out in the correct time span by monitoring ACK/NACK sent in PCell during activation and deactivation of SCell1, respectively.

The test equipment verifies the activation time by counting the subframes from the time when the Cell 2 (SCell1) activation command is sent until a CSI report with other than CQI index 0 is received.

The test equipment verifies the deactivation time by counting the subframes from the time when the Cell 2 (SCell1) deactivation command is sent until CQI reporting for SCell1 is discontinued.

Table A.8.16.40.1-1: General test parameters for unknown SCell1 activation case

Parameter	Unit	Value	Comment
E-UTRA RF Channel		1, 2, 3	Three radio channels are used for this test
Number		1, 2, 5	
Active PCell		Cell 1	Primary cell on RF channel number 1.
Deconfigured deactivated		Cell 2	Deconfigured deactivated secondary cell
SCell1		Oeli Z	on RF channel number 2.
Configured deactivated		Cell 3	Configured deactivated secondary cell on
SCell2		Cell 3	RF channel number 3.
CP length		Normal	
DRX		OFF	Continuous monitoring of primary cell
CQI/PMI periodicity and		0	CQI reporting for SCell every second
offset configuration index		U	subframe
Cell-individual offset for cells	dB	0	Individual offset for cells on PCC.
on RF channel number 1	ub	0	
Cell-individual offset for cells	dB	0	Individual offset for cells on SCC1.
on RF channel number 2	ub	0	
Cell-individual offset for cells	dB	0	Individual offset for cells on SCC2.
on RF channel number 3	ub	0	
SCell measurement cycle	ms	320	
(measCycleSCell)	1110	020	
T1	ms	100	During this time the PCell and SCell2 shall
	1110	100	be known and the SCell1 configured.
T2	s	1	During this time the UE shall activate the
	3	'	SCell1 and SCell2.
Т3	s	1	During this time the UE shall deactivate
N	3	1	the SCell1 and SCell2.

Note: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.16.40.1-2: Cell specific test parameters for E-UTRAN FDD known SCell1 activation with PCell in TDD

Parameter	Unit	Cell 1		Cell 2	Cell 3
		T1 T2 T3	T1	T2 T3	T1 T2 T3
E-UTRA RF Channel Number		1		2	3
TDD special subframe configuration		6		-	-
TDD uplink-downlink configuration		1		-	-
BW _{channel}	MHz	5MHz: N _{RB,c} = 25	5ML	Hz: N _{RB,c} = 25	5MHz: N _{RB,c} = 25
DVV channel	IVII IZ	$10MHz: N_{RB,c} = 50$	10MI	Hz: $N_{RB,c} = 50$	$10MHz: N_{RB,c} = 50$
PDSCH parameters:		20MHz: N _{RB,c} = 100 5MHz: R.4 TDD	ZUIVIF	$Hz: N_{RB,c} = 100$	20MHz: N _{RB,c} = 100
DL Reference		10MHz: R.0 TDD		-	-
Measurement Channel		20MHz: R.3 TDD			
PCFICH/PDCCH/PHIC		5MHz: R.11 TDD	5ME	lz: R.11 FDD	5MHz: R.11 FDD
H parameters:		10MHz: R.6 TDD		lHz: R.6 FDD	10MHz: R.6 FDD
DL Reference		20MHz: R.10 TDD		Hz: R.10 FDD	20MHz: R.10 FDD
Measurement Channel					
OCNG Patterns		5MHz: OP.9 TDD		z: OP.16 FDD	5MHz: OP.16 FDD
		10MHz: OP.1 TDD 20MHz: OP.7 TDD		Hz: OP.2 FDD Hz: OP.12 FDD	10MHz: OP.2 FDD 20MHz: OP.12 FDD
PBCH_RA	dB	· · · · · ·		-	
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0		0	0
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				ļ ,
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1} Noc Note 2	dB	404		404	404
	dBm/15 kHz	-104		-104	-104
Ê _s /N _{oc}	dB	17	-infinity	17	17
Ê _s /I _{ot}	dB	17	-infinity	17	17
RSRP Note 3	dBm/15 kHz	-87	-infinity	-87	-87
SCH_RP Note 3	dBm/15 kHz	-87	-infinity	-87	-87
lo Note 3	dBm/Ch	-59.13	-76.22	-59.13	-59.13
	BW	+10log	+10log	+10log	+10log
		(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)
Propagation Condition		AWGN	AWGN		AWGN
Antenna Configuration		1x2	1x2		1x2
Timing offset to Cell 1	μs	-	0		0
Time alignment error relative to cell 1 Note 5	μs	-	≤ TAE		≤TAE
Time alignment error relative to cell 2 Note 5	μs	-		-	≤TAE

- Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.
- Note 3: Es/lot, RSRP, SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 4: The uplink resources for CSI reporting are assigned to the UE prior to the start of time period T2.
- Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.
- Note 6: TDD special subframe configuration and uplink-downlink configuration are as specified in Table 4.2-1 and 4.2-2 in TS36.211 [16]. The same configuration applies to all TDD cells.

A.8.16.40.2 Test Requirements

During T2 the UE shall send the first CSI report for SCell12in a subframe (m+8), or in a subframe (m+9) if the subframe (m+8) was subject to interruption. Whether CSI report in subframe (m+8) was interrupted or not is checked by monitoring ACK/NACK sent in PCell in subframe (m+8).

During T2 the UE shall start sending CSI reports for SCell1 with non-zero CQI index at latest in a subframe (m+39).

During T3 the UE shall stop sending CSI reports for SCell1 at latest in a subframe (n+8).

During T2 interruption of PCell during SCells activation shall not happen outside subframes (m+5) and (m+9) and outside the subframes (m+20) to (m+24).

During T3 interruption of PCell during SCells deactivation shall not happen outside subframes (n+5) to (n+9) and outside subframes (n+20) and (n+24).

The interruption of PCell shall not be more than the values specified for intra-band CA and inter-band CA in Section 7.8.2.

All of the above test requirements shall be fulfilled in order for the observed SCell1 activation delay and SCell1 deactivation delay to be counted as correct. The rate of correct observed SCell1 activation delay and SCell1 deactivation delay during repeated tests shall be at least 90%.

NOTE: During T2 if there are no uplink resources for reporting the valid CSI in subframe (m+39) then the UE shall use the next available uplink resource for reporting the corresponding valid CSI.

A.8.16.41 3 DL FDD CA activation and deactivation of unknown SCell in non-DRX

A.8.16.41.1 Test Purpose and Environment

The purpose of this test is to verify that the SCell activation and deactivation times are within the requirements stated in clause 7.7 for 3DL FDD carrier aggregation, when the SCell is unknown by the UE at the time of activation.

The test parameters are given in Tables A.8.16.41-1 and cell-specific parameters in A.8.16.41-2 below. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. There are three carriers, each with one cell. Cell 1 and Cell 3 have constant signal levels throughout the test. Before the test starts the UE is connected to Cell 1 (PCell) on radio channel 1 (PCC) and Cell 3 (deactivated SCell2) on radio channel 3 (SCC2), but is not aware of Cell 2 (SCell1) on radio channel 2 (SCC1). The UE is only monitoring the PCC and SCC2. The UE shall be continuously scheduled in the PCell throughout the whole test.

At the beginning of T1 the UE receives an RRC message by which the Cell 2 (SCell1) becomes configured on radio channel 2 (SCC1). During T1 the signal level of Cell 2 (SCell1) is powered off and UE is not aware of Cell 2 (SCell1).

A MAC message for activation of the SCell1 is sent by the test equipment 100ms after the RRC message, in a subframe # denoted m which is an even number. The point in time at which the MAC message for activation of Cell 2 (SCell1) is received at the UE antenna connector defines the start of time period T2. Immediately at beginning of T2 the transmission power of Cell 2 (SCell1) is increased to same level as for Cell 1 (PCell). The test equipment sends a MAC message for activation of Cell 3 (SCell2) in subframe (m+10). Since UE received SCell2 activation command during activation of SCell1, the UE shall be able to report valid CSIs for the activated SCell1 at latest in subframe (m+39)

provided the SCell1 can be successfully detected on the first attempt. The UE shall start reporting CSI in subframe (m+8) and shall report CQI index 0 (out-of-range) until the SCell activation has been completed. Any PCell interruption due to activation of SCells shall occur in the subframe (m+5) to (m+9) and (m+15) to (m+19).

Time period T3 starts when a MAC message for deactivation of Cell 2 (SCell1), sent from the test equipment to the UE in a subframe # denoted n, is received at the UE antenna connector. The test equipment sends a MAC message for deactivation of the Cell 3 (SCell2) in subframe (n+10). The UE shall carry out deactivation of Cell 2 (SCell1) at latest in subframe (n+8), and any PCell interruption due to the deactivation shall occur in the subframes (n+5) to (n+9) and (n+15) to (n+19).

The test equipment verifies that potential interruption is carried out in the correct time span by monitoring ACK/NACK sent in PCell during activation and deactivation of SCells, respectively.

The test equipment verifies the activation time by counting the subframes from the time when the Cell 2 (SCell1) activation command is sent until a CSI reports with other than CQI index 0 is received.

The test equipment verifies the deactivation time by counting the subframes from the time when the Cell 2 (SCell1) deactivation command is sent until CQI reporting for SCell1 is discontinued.

Table A.8.16.41-1: General test parameters for E-UTRAN FDD 3 DL CA activation and deactivation of unknown SCell in non-DRX

Parameter	Unit	Value	Comment
E-UTRA RF Channel Number		1, 2, 3	Three radio channels are used for this test
Active PCell		Cell 1	Primary cell on RF channel number 1.
Deconfigured SCell1		Cell 2	Deconfigured secondary cell on RF channel number 2
Configured deactivated SCell2		Cell 3	Configured deactivated secondary cell on RF channel number 3.
CP length		Normal	
DRX		OFF	Continuous monitoring of primary cell
CQI/PMI periodicity and offset configuration index		0	CQI reporting for SCells every second subframe
Cell-individual offset for cells on RF channel number 1	dB	0	Individual offset for cells on PCC.
Cell-individual offset for cells on RF channel number 2	dB	0	Individual offset for cells on SCC1.
Cell-individual offset for cells on RF channel number 3	dB	0	Individual offset for cells on SCC2.
SCell measurement cycle (measCycleSCell)	ms	320	
T1	ms	100	During this time the PCell and SCell2 shall be known and the SCell1 configured.
T2	S	1	During this time the UE shall activate the SCell1 and SCell2.
T3	S	1	During this time the UE shall deactivate the SCell1 and SCell2.

Table A.8.16.41-2: Cell specific test parameters for E-UTRAN FDD 3 DL CA activation and deactivation of unknown SCell in non-DRX

Parameter	Unit	Cell 1	C	ell 2	Cell 3	
		T1 T2 T3	T1	T2 T3	T1 T2 T3	
E-UTRA RF Channel Number		1	2		3	
BW _{channel}		5MHz: N _{RB,c} = 25		$N_{RB,c} = 25$	5MHz: N _{RB,c} = 25	
		10MHz: $N_{RB,c} = 50$		$N_{RB,c} = 50$	$10MHz: N_{RB,c} = 50$	
		20MHz: N _{RB,c} = 100	20MHz:	$N_{RB,c} = 100$	20MHz: $N_{RB,c} = 100$	
PDSCH parameters:		5MHz: R.7 FDD		-	-	
DL Reference Measurement Channel		10MHz: R.3 FDD				
PCFICH/PDCCH/PHICH		20MHz: R.6 FDD 5MHz: R.11 FDD	5M⊔z:	R.11 FDD	5MHz: R.11 FDD	
parameters:		10MHz: R.6 FDD		:: R.6 FDD	10MHz: R.6 FDD	
DL Reference Measurement		20MHz: R.10 FDD		R.10 FDD	20MHz: R.10 FDD	
Channel					202	
OCNG Patterns		5MHz: OP.20 FDD	5MHz: (OP.16 FDD	5MHz: OP.16 FDD	
		10MHz: OP.10 FDD		OP.2 FDD	10MHz: OP.2 FDD	
		20MHz: OP.17 FDD	20MHz:	OP.12 FDD	20MHz: OP.12 FDD	
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB					
PHICH_RB	dB	0		0	0	
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
N _{oc} Note 2	dBm/	-104	-	104	-104	
	15 kHz					
Ê _s /N _{oc}	dB	17	-infinity	17	17	
Ê _s /I _{ot} Note 3	dB	17	-infinity	17	17	
RSRP Note 3	dBm/	-87	-infinity	-87	-87	
Note 3	15 kHz					
SCH_RP Note 3	dBm/	-87	-infinity	-87	-87	
To Note 3	15 kHz	F0 40 - 40l	70.00	F0 40 · 40	F0.40 : 40	
10 100	dBm/	-59.13+10log	-76.22	-59.13+10log	-59.13+10log	
	Ch BW	(N _{RB,c} /50)	+10log (N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	
Propagation Condition		AWGN		WGN	AWGN	
Antenna Configuration		1x2		1x2	1x2	
Timing offset to Cell 1	μs	-		0	0	
Time alignment error relative to	μS	-			≤ TAE	
Time alignment error relative to cell 1 Note 5	μδ	-		., _	<u> </u>	
Time alignment error relative to Cell 2 Note 5	μs	-		-	≤ TAE	

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: E_s/I_{ot}, RSRP, SCH_RP and Io have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: The uplink resources for CSI reporting are assigned to the UE prior to the start of time period T2.

Note 5: The time alignment error (TAE) between two cells specified in TS36.104 [30] clause 6.5.3.1 (value depends upon the type of carrier aggregation).

A.8.16.41.2 Test Requirements

During T2 the UE shall send the first CSI report for SCell1 in a subframe (m+8), or in a subframe (m+10) if the subframe (m+8) was subject to interruption. Whether CSI report in subframe (m+8) was interrupted or not is checked by monitoring ACK/NACK sent in PCell in subframe (m+8).

During T2 the UE shall start sending CSI reports for SCell1 with non-zero CQI index at latest in a subframe (m+39).

During T2 the UE shall stop sending CSI reports for SCell1 at latest in a subframe (n+8).

During T2 interruption of PCell during SCells activation shall not happen outside the subframes (m+5) to (m+9) and outside the subframes (m+15) to (m+19).

During T2 interruption of PCell during SCells deactivation shall not happen outside the subframes (n+5) to (n+9) and outside the subframes (n+15) to (n+19).

The interruption of PCell shall not be more than the values specified for intra-band CA and inter-band CA in Section 7.8.2.

All of the above test requirements shall be fulfilled in order for the observed SCell1 activation delay and SCell1 deactivation delay to be counted as correct. The rate of correct observed SCell1 activation delay and SCell1 deactivation delay during repeated tests shall be at least 90%.

NOTE: During T2 if there are no uplink resources for reporting the valid CSI in a subframe (m+39) then the UE shall use the next available uplink resource for reporting the corresponding valid CSI.

A.8.16.42 3 DL TDD CA activation and deactivation of unknown SCell in non-DRX

A.8.16.42.1 Test Purpose and Environment

The purpose of this test is to verify that the SCell activation and deactivation times are within the requirements stated in clause 7.7 for 3DL TDD carrier aggregation, when the SCell is unknown by the UE at the time of activation.

The test parameters are given in Tables A.8.16.42-1 and cell-specific parameters in A.8.16.42-2 below. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. There are three carriers, each with one cell. Cell 1 and cell 3 have constant signal levels throughout the test. Before the test starts the UE is connected to Cell 1 (PCell) on radio channel 1 (PCC) and Cell 3 (deactivated SCell2) on redio channel 3 (SCC2), but is not aware of Cell 2 (SCell1) on radio channel 2 (SCC1). The UE is only monitoring the PCC and SCC2. The UE shall be continuously scheduled in the PCell throughout the whole test.

At the beginning of T1 the UE receives an RRC message by which the Cell 2 (SCell 1) becomes configured on radio channel 2 (SCC1). During T1 the signal level of Cell 2 (SCell 1) is powered off and UE is not aware of Cell 2 (SCell 1).

A MAC message for activation of the SCell1 is sent by the test equipment 100ms after the RRC message, in a subframe # denoted m, where m is 4 or 9. The point in time at which the MAC message for activation of Cell 2 (SCell1) is received at the UE antenna connector defines the start of time period T2. Immediately at beginning of T2 the transmission power of Cell 2 (SCell1) is increased to same level as for Cell 1 (PCell). The test equipment sends a MAC message for activation of Cell 3 (SCell2) in subframe (m+15). Since UE received SCell2 activation command during activation of SCell1, the UE shall be able to report valid CSIs for the activated SCell1 at latest in subframe (m+39) provided the SCell1 can be successfully detected on the first attempt. The UE shall start reporting CSI in subframe (m+8) and shall report CQI index 0 (out-of-range) until the SCell activation has been completed. Any PCell interruption due to activation of SCells shall occur in the subframes (m+5) to (m+11) and (m+20) to (m+26).

Time period T3 starts when a MAC message for deactivation of Cell 2 (SCell1), sent from the test equipment to the UE in a subframe # denoted n, where n is 4 or 9, is received at the UE antenna connector. The test equipment sends a MAC message for deactivation of the Cell 3 (SCell2) in subframe (n+15). The UE shall carry out deactivation of Cell 2 (SCell1) at latest in subframe (n+8), and any PCell interruption due to the deactivation of SCells shall occur in the subframes (n+5) to (n+11) and (n+20) to (n+26).

The test equipment verifies that potential interruption is carried out in the correct time span by monitoring ACK/NACK sent in PCell during activation and deactivation of SCells, respectively.

The test equipment verifies the activation time by counting the subframes from the time when the Cell 2 (SCell1) activation command is sent until a CSI reports with other than CQI index 0 is received.

The test equipment verifies the deactivation time by counting the subframes from the time when the Cell 2 (SCell1) deactivation command is sent until CQI reporting for SCell1 is discontinued.

Table A.8.16.42-1: General test parameters for E-UTRAN TDD 3 DL CA activation and deactivation of unknown SCell in non-DRX

Parameter	Unit	Value	Comment
E-UTRA RF Channel Number		1, 2, 3	Three radio channels are used for this test
Active PCell		Cell 1	Primary cell on RF channel number 1.
Deconfigured SCell1		Cell 2	Deconfigured secondary cell on RF channel number 2.
Configured deactivated SCell2		Cell 3	Configured deactivated secondary cell on RF channel number 3.
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211 [16]. The same configuration applies to all cells.
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211 [16]. The same configuration applies to all cells
DRX		OFF	Continuous monitoring of primary cell
CQI/PMI periodicity and offset configuration index		0	CQI reporting for SCells every UL subframe
Cell-individual offset for cells on RF channel number 1	dB	0	Individual offset for cells on PCC.
Cell-individual offset for cells on RF channel number 2	dB	0	Individual offset for cells on SCC1.
Cell-individual offset for cells on RF channel number 3	dB	0	Individual offset for cells on SCC2.
Filter coefficient		0	L3 filtering is not used
SCell measurement cycle (measCycleSCell)	ms	320	
T1	ms	100	During this time the PCell and SCell2 shall be known and the SCell1 configured,
T2	S	1	During this time the UE shall activate the SCell1 and SCell2.
ТЗ	S	1	During this time the UE shall deactivate the SCell1 and SCell2
Note: This test verifies the RRM r to the principle defined in s			pendent of channel bandwidth and is performed according

Table A.8.16.42-2: Cell specific test parameters for E-UTRAN TDD 3 DL CA activation and deactivation of unknown SCell in non-DRX

Parameter	Unit	Cell 1		Cell 2	Cell 3
		T1 T2 T3	T1	T2 T3	T1 T2 T3
E-UTRA RF Channel Number		1		2	3
BW _{channel}		5MHz: N _{RB,c} = 25	5MHz:	$N_{RB,c} = 25$	5MHz: N _{RB,c} = 25
		$10MHz: N_{RB,c} = 50$		$N_{RB,c} = 50$	10MHz: $N_{RB,c} = 50$
		$20MHz: N_{RB,c} = 100$	20MHz:	$N_{RB,c} = 100$	20MHz: $N_{RB,c} = 100$
PDSCH parameters:		5MHz: R.4 TDD		-	-
DL Reference Measurement		10MHz: R.0 TDD			
Channel		20MHz: R.3 TDD		D 44 TDD	CMILE, D.44 TDD
PCFICH/PDCCH/PHICH parameters:		5MHz: R.11 TDD 10MHz: R.6 TDD		R.11 TDD z: R.6 TDD	5MHz: R.11 TDD 10MHz: R.6 TDD
DL Reference Measurement		20MHz: R.10 TDD		: R.10 TDD	20MHz: R.10 TDD
Channel		201VII 12. TV. TO TDD	2011112	14.10 100	20101112.113.110 120
OCNG Patterns		5MHz: OP.9 TDD	5MHz:	OP.10 TDD	5MHz: OP.10 TDD
		10MHz: OP.1 TDD		: OP.2 TDD	10MHz: OP.2 TDD
		20MHz: OP.7 TDD	20MHz	: OP.8 TDD	20MHz: OP.8 TDD
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0		0	0
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG RB ^{Note 1}	dB				
N _{oc} Note 2	dBm/	-104		-104	-104
	15 kHz				
Ê _s /N _{oc}	dB	17	-infinit	17	17
Ê _s /I _{ot} Note 3	dB	17	-infinit	17	17
RSRP Note 3	dBm/	-87	-infinit	-87	-87
Note 2	15 kHz				
SCH_RP Note 3	dBm/	-87	-infinit	-87	-87
lo Note 3	15 kHz				
lo note o	dBm/	-59.13+10log	-76.22	-59.13+10log	-59.13+10log
	Ch BW	(N _{RB,c} /50)	+10log (N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)
Propagation Condition		AWGN		WGN	AWGN
Antenna Configuration		1x2		1x2	1x2
Timing offset to Cell 1	μs	-		0	0
Time alignment error relative to cell 1 Note 5	μs	-	<u></u>	TAE	≤ TAE
Time alignment error relative to cell 2 Note 5	μs	-		-	≤ TAE

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: E_s/I_{ot}, RSRP, SCH_RP and Io have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: The uplink resources for CSI reporting are assigned to the UE prior to the start of time period T2.

Note 5: The time alignment error (TAE) between two cells specified in TS 36.104 [30] clause 6.5.3.1 (value depends upon the type of carrier aggregation).

A.8.16.42.2 Test Requirements

During T2 the UE shall send the first CSI report for SCell1 in a subframe (m+8), or in a subframe (m+9) if the subframe (m+8) was subject to interruption, or in a subframe (m+13) if the subframes (m+8) and (m+9) were subject to interruption when an intra-band SCell is activated. Whether CSI report in subframe (m+8) and/or (m+9) was interrupted or not is checked by monitoring ACK/NACK sent in PCell in subframe (m+8) and/or (m+9).

During T2 the UE shall start sending CSI reports for SCell1 with non-zero CQI index at latest in a subframe (m+39).

During T3 the UE shall stop sending CSI reports for SCell1 at latest in a subframe (n+8).

During T2 interruption of PCell during SCells activation shall not happen outside the subframes (m+5) to (m+11) and outside the subframes (m+20) to (m+26).

During T3 interruption of PCell during SCells deactivation shall not happen outside the subframes (n+5) to (n+11) and outside the subframes (n+20) to (n+26).

The interruption of PCell shall not be more than the values specified for intra-band CA and inter-band CA in Section 7.8.2.

All of the above test requirements shall be fulfilled in order for the observed SCell1 activation delay and SCell1 deactivation delay to be counted as correct. The rate of correct observed SCell1 activation delay and SCell1 deactivation delay during repeated tests shall be at least 90%.

NOTE: During T2 if there are no uplink resources for reporting the valid CSI in a subframe (m+39) then the UE shall use the next available uplink resource for reporting the corresponding valid CSI.

A.8.17 RSTD Measurements for E-UTRAN Carrier Aggregation

A.8.17.1 E-UTRAN FDD RSTD measurement reporting delay test case

A.8.17.1.1 Test Purpose and Environment

The purpose of the test case is to verify that the RSTD measurements meet the requirements specified in Clause 8.4 in a synchronized network environment with fading propagation conditions. This test case will verify the measurement period requirements specified in Clause 8.4.3 for RSTD measurements performed on the secondary component carrier and also the measurement period requirements for RSTD measurements performed on both the primary and secondary component carriers specified in Clause 8.4.4.

In the tests, there are two configured component carriers: PCC and SCC, and three synchronous cells: Cell 1, Cell 2 and Cell 3. Cell 1 is PCell on the PCC, Cell 2 is an active SCell on the SCC, and Cell 3 is a neighbour cell on the SCC. In all tests, Cell 2 is the OTDOA assistance data reference cell.

The test case includes two tests. Test 1 is designed for the scenario where the UE receives OTDOA assistance data with cells on SCC, and the UE is expected to report RSTD measurements performed on SCC only. Test 2 is designed for the scenario where the UE receives OTDOA assistance data with cells on PCC and SCC, and the UE is expected to report RSTD measurements performed on PCC and on SCC.

Each test consists of three consecutive time intervals, with duration of T1, T2 and T3. Cell 1 is active in T1, T2 and T3, whilst Cell 2 is active only in T2 and T3, and Cell 3 is active only during T2. The beginning of the time interval T2 shall be aligned with the first PRS positioning subframe of a positioning occasion in the OTDOA assistance data reference cell, where the PRS positioning occasion is as defined in Clause 8.1.2.5.1. Cell 1 transmits PRS in T2, while Cell 2 transmits PRS only in T3, and Cell 3 transmits PRS only in T2.

Note: The information on when PRS is muted is conveyed to the UE using PRS muting information.

The OTDOA assistance data as defined in TS 36.355, Clause 6.5.1.1, shall be provided to the UE during T1. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of T2, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data.

The test parameters are as given in Table A.8.17.1.1-1, Table A.8.17.1.1-2, Table A.8.17.1.1-3 and Table A.8.17.1.1-4.

Table A.8.17.1.1-1: General test parameters for E-UTRAN FDD RSTD measurement reporting delay under fading propagation conditions for carrier aggregation

Parameter	Unit	V	alue	Comment
		Test 1	Test 2	
PCell		С	ell 1	PCell is on RF channel 1 (PCC).
SCell		С	ell 2	SCell on RF channel 2 (SCC). Cell 2 is the assistance data reference cell.
Other neighbor cell			ell 3	Neighbor cell on RF channel 2 (SCC).
PCFICH/PDCCH/PHICH parameters			easurement Channel 3 FDD	As specified in clause A.3.1.2.1
Channel Bandwidth (BW _{channel})	MHz		10	
PRS Transmission Bandwidth	RB		50	PRS are transmitted over the system bandwidth
PRS configuration index $I_{\rm PRS}$			cells on PCC cells on SCC	This corresponds to periodicity of 320 ms and PRS subframe offset of $I_{\rm PRS}$ – 160 DL subframes, as defined in TS 36.211 [16], Table 6.10.4.3-1
Number of consecutive downlink positioning subframes N_{PRS}			1	As defined in TS 36.211 [16]. The number of subframes in a positioning occasion
Physical cell ID PCI		(PCI of Cell 2 – PCI of Cell 3)mod6=0		The PCI of Cell 1 is selected randomly. PCIs of Cell 2 and Cell 3 are selected randomly such that the relative subcarrier shifts of PRS patterns among these cells are as given by the condition
CP length		No	ormal	
DRX		(ON	DRX parameters are further specified in Table A.8.17.1.1-3
Radio frame receive time offset between the cells at the UE antenna connector	μs		o Cell 2: 1 o Cell 2: -1	PRS are transmitted from synchronous cells
Time alignment error between cell2 and cell1	μs		error as specified in [30] clause 6.5.3.1.	The value of time alignment error depends upon the type of carrier aggregation.
Expected RSTD	μs	Cell 3: 2 Other neighbour cells: randomly between -3 and 3	Cell 1: -2 Cell 3: 2 Other neighbour cells: randomly between -3 and 3	The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator
Expected RSTD uncertainty for all neighbour cells	μs	5		The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD-Uncertainty index
Cells in OTDOA assistance data		OTDOA neighbor cells include Cell 3 and other 14 cells on SCC	OTDOA neighbor cells include Cell 1 and other 7 cells on PCC, and Cell 3 and other 6 cells on SCC	The list includes the reference cell (received in OTDOA-ReferenceCellInfo [24]) and 15 other cells, all received in OTDOA-ProvideAssistanceData [24]. Cell 1 (when included) appears at random places in the first half of the neighbour cell list in the OTDOA assistance data. Cell 3 always appears at random places in the second half of the list.

prs-SubframeOffset			on PCC: 310 xcept reference cell: 0	Subframe offset, counted in full subframes. The corresponding parameter in the OTDOA assistance data is prs-SubframeOffset specified in TS 36.355 [24]
slotNumberOffset			on PCC: 0 xcept reference cell: 0	The slot number offset at the transmitter between a neighbour cell and the assistance data reference cell. The corresponding parameter in the OTDOA assistance data is slotNumberOffset specified in TS 36.355 [24].
PRS muting info		Cell 1: Cell 1: '11110000' '1111111100000000' Cell 2: Cell 2: '00001111' '00000000111111111' Cell 3: Cell 3: '11110000' '11111111100000000'		Correponds to prs-MutingInfo defined in TS 36.355 [24]
T1	S	3		The length of the time interval from the beginning of each test
T2	S	1.28 2.48		The length of the time interval that follows immediately after time interval T1
Т3	s	1.28	2.48	The length of the time interval that follows immediately after time interval T2

Table A.8.17.1.1-2: Cell-specific test parameters for E-UTRAN FDD RSTD measurement reporting delay under fading propagation conditions during T1 for carrier aggregation

Parameter	Unit	Cell 1	Cell 2	Cell 3				
E-UTRA RF Channel Number		1	N/A	N/A				
Correlation Matrix and Antenna Configuration		1x2 Low	1x2 Low	1x2 Low				
OCNG patterns defined in A.3.2.1		OP.5 FDD	N/A	N/A				
PBCH_RA PBCH_RB PSS_RA								
SSS_RA PCFICH_RB	† -							
PHICH_RA	dB	0	N/A	N/A				
PHICH_RB PDCCH_RA	1							
PDCCH_RB OCNG_RA ^{Note 1} OCNG_RB ^{Note 1}								
N_{oc} Note 3	dBm/ 15 kHz	-95	N/A	N/A				
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{oc}$	dB	-Infinity	-Infinity	-Infinity				
Io Note 4	dBm/ 9 MHz	-67.22	N/A	N/A				
$\hat{\mathbf{E}}_{\mathrm{s}}/N_{oc}$	dB	0	-Infinity	-Infinity				
Propagation Condition Note 1: OCNG sha		ETU30 such that active cell (Cell 1) is fully allocated and a constant total						

Note 1: OCNG shall be used such that active cell (Cell 1) is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test are assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: lo levels have been derived from other parameters and are given for information purpose. These are not settable test parameters.

Table A.8.17.1.1-3: Cell-specific test parameters for E-UTRAN FDD RSTD measurement reporting delay under fading propagation conditions during T2 and T3 for carrier aggregation

Parameter	Unit	Cell 1		Cell 2		Cell 3		
		T2	T3	T2	Т3	T2	T3	
E-UTRA RF		1		2		2		
Channel Number								
Correlation Matrix		1x2 Low		1x2 Low		1x2 Low		
and Antenna								
Configuration						00.0	ı	
OCNG patterns		OP.5 FDD		OP.6 FDD		OP.6	N/A	
defined in A.3.2.1						FDD		
PBCH_RA	<u> </u>							
PBCH_RB	<u> </u>							
PSS_RA	<u> </u>							
SSS_RA	<u> </u>							
PCFICH_RB								
PHICH_RA	dB	0		0		0	N/A	
PHICH_RB	<u> </u>							
PDCCH_RA								
PDCCH_RB								
OCNG_RA ^{Note 1}								
OCNG_RB ^{Note 1}								
PRS_RA	dB	-6	N/A	N/A	3	3	N/A	
$N_{oc}^{ m Note~3}$	dBm/ 15 kHz	-98	-98	-98	-95	-98	-95	
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}$	dB	-4	-Infinity	-Infinity	-1	-8	-Infinity	
PRS $\hat{E}_{_{s}}/I_{_{ot}}^{}$ Note 4	dB	-4	-Infinity	-Infinity	-1	-8	-Infinity	
lo Note 4	dBm/ 9 MHz	-69.94	N/A	N/A	-66.68	-70.11	N/A	
PRP Note 4	dBm/ 15 kHz	-102	-Infinity	-Infinity	-96	-106	-Infinity	
RSRP Note 4	dBm/ 15 kHz	-96	-96	-105	-99	-109	-Infinity	
${ m \hat{E}}_{ m s}/N_{oc}^{ m Note~4}$	dB	2	2	-7	-4	-11	-Infinity	
Propagation Condition		ETU30						

Note 1: OCNG shall be used such that active cells (all, except Cell 3 in T3) are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols other than those in the subframes with transmitted PRS.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test are assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: If PRS_RA is not "N/A", \hat{E}_s/N_{oc} , PRS \hat{E}_s/I_{ot} , Io, RSRP and PRP levels have been derived from other parameters and are given for information purpose. If PRS_RA is "N/A", Io and RSRP levels have been derived from other parameters and are given for information purpose. These are not settable test parameters. Interference conditions shall be applied to all PRS symbols of DL positioning subframes.

Table A.8.17.1.1-4: DRX parameters for the test of E-UTRAN FDD intra-frequency RSTD measurement reporting delay under fading propagation conditions for carrier aggregation

Field	Value	Comment
onDurationTimer	psf1	
Drx-InactivityTimer	psf1	As appointed in
drx-RetransmissionTimer	sf1	- As specified in - TS 36.331 [2], Clause 6.3.2
longDRX-CycleStartOffset	sf320	13 30.331 [2], Clause 6.3.2
shortDRX	Disable	

A.8.17.1.2 Test Requirements

The RSTD measurement time fulfils the requirements specified in Clause 8.4.

In Test 1, the UE shall perform and report the RSTD measurements from Cell 2 and Cell 3 within 2560 ms starting from the beginning of time interval T2.

In Test 2, the UE shall perform and report the RSTD measurements from Cell 1 and Cell 2, and RSTD measurements from Cell 2 and Cell 3 within 4960 ms starting from the beginning of time interval T2.

The rate of the correct events for each neighbour cell observed during repeated tests shall be at least 90%, where the reported RSTD measurement for each correct event shall be within the RSTD reporting range specified in Clause 9.1.10.3, i.e., between RSTD 0000 and RSTD 12711.

NOTE: The RSTD measurement times in the tests are derived from the following expression,

$$T_{PRS}(M-1)+160\left\lceil\frac{n}{M}\right\rceil,$$

where M =8 and n =16 for Test 1, and M =16 and n =16 for Test 2. For Test 1, the M and n parameters specified in Clause 8.1.2.5.1, Table 8.1.2.5.1-1, under Note 1, which gives the total RSTD measurement time of 2560 ms for Cell 3 with respect to the reference cell Cell 2. For Test 2, the M and n parameters are specified in Clause 8.1.2.6.1, Table 8.1.2.6.1-1, under Note 1, which gives the total RSTD measurement time of 4960 ms for reporting the RSTD measurements of Cell 1 and Cell 3 with respect to the reference cell Cell 2.

A.8.17.2 E-UTRAN TDD RSTD measurement reporting delay test case

A.8.17.2.1 Test Purpose and Environment

The purpose of the test case is to verify that the RSTD measurements meet the requirements specified in Clause 8.4 in a synchronized network environment with fading propagation conditions. This test case will verify the measurement period requirements specified in Clause 8.4.3 for RSTD measurements performed on the secondary component carrier and also the measurement period requirements for RSTD measurements performed on both the primary and secondary component carriers specified in Clause 8.4.4.

In the tests, there are two configured component carriers: PCC and SCC, and three synchronous cells: Cell 1, Cell 2 and Cell 3. Cell 1 is PCell on the PCC, Cell 2 is an active SCell on the SCC, and Cell 3 is a neighbour cell on the SCC. In all tests, Cell 2 is the OTDOA assistance data reference cell.

The test case includes two tests. Test 1 is designed for the scenario where the UE receives OTDOA assistance data with cells on SCC, and the UE is expected to report RSTD measurements performed on SCC only. Test 2 is designed for the scenario where the UE receives OTDOA assistance data with cells on PCC and SCC, and the UE is expected to report RSTD measurements performed on PCC and on SCC.

Each test consists of three consecutive time intervals, with duration of T1, T2 and T3. Cell 1 is active in T1, T2 and T3, whilst Cell 2 is active only in T2 and T3, and Cell 3 is active only during T2. The beginning of the time interval T2 shall be aligned with the first PRS positioning subframe of a positioning occasion in the OTDOA assistance data reference cell, where the PRS positioning occasion is as defined in Clause 8.1.2.5.1. Cell 1 transmits PRS in T2, while Cell 2 transmits PRS only in T3, and Cell 3 transmits PRS only in T2.

Note: The information on when PRS is muted is conveyed to the UE using PRS muting information.

The OTDOA assistance data as defined in TS 36.355, Clause 6.5.1.1, shall be provided to the UE during T1. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of T2, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data.

The test parameters are as given in Table A.8.17.2.1-1, Table A.8.17.2.1-2, Table A.8.17.2.1-3 and Table A.8.17.2.1-4.

Table A.8.17.2.1-1: General test parameters for E-UTRAN TDD RSTD measurement reporting delay under fading propagation conditions for carrier aggregation

Parameter	Unit	Value		Comment	
		Test 1	Test 2		
PCell		Ce	<u>ll 1 </u>	PCell is on RF channel 1 (PCC).	
SCell		Cell 2		SCell on RF channel 2 (SCC). Cell 2 is the assistance data reference cell.	
Other neighbor cell		Ce	II 3	Neighbor cell on RF channel 2 (SCC).	
PCFICH/PDCCH/PHICH parameters			urement Channel R.6 DD	As specified in clause A.3.1.2.2	
Channel Bandwidth (BW _{channel})	MHz	1	0		
PRS Transmission Bandwidth	RB	5	0	PRS are transmitted over the system bandwidth	
PRS configuration index I_{PRS}			ells on PCC ells on SCC	This corresponds to periodicity of 320 ms and PRS subframe offset of $I_{\rm PRS}$ – 160 DL subframes, as defined in TS 36.211 [16], Table 6.10.4.3-1	
Number of consecutive downlink positioning subframes N_{PRS}			ı	As defined in TS 36.211 [16]. The number of subframes in a positioning occasion	
Physical cell ID PCI		(PCI of Cell 2 – PC	cl of Cell 3)mod6=0	The PCI of Cell 1 is selected randomly. PCIs of Cell 2 and Cell 3 are selected randomly such that the relative subcarrier shifts of PRS patterns among these cells are as given by the condition	
TDD uplink-downlink configuration		,	1	As specified in TS 36.211 [16], Clause 4.2; corresponds to a configuration with 5 ms switch- point periodicity and two downlink consecutive subframes	
TDD special subframe configuration		6		As specified in TS 36.211 [16], Clause 4.2; corresponds to DwPTS of $19760 \cdot T_{\rm s}$ and	
CD longth		Name of		UpPTS of $4384 \cdot T_{\mathrm{s}}$	
CP length		Normal		DRX parameters are further	
DRX		0	N	specified in Table A.8.17.2.1-3	
Radio frame receive time offset between the cells at the UE antenna connector	μs	Cell 1 to Cell 2: 1 Cell 3 to Cell 2: -1		PRS are transmitted from synchronous cells	
Time alignment error between cell2 and cell1	μs	≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1.		The value of time alignment error depends upon the type of carrier aggregation.	
Expected RSTD	μs	Cell 3: 2 Other neighbour cells: randomly between -3 and 3 Cell 1: -2 Cell 3: 2 Other neighbour cells: randomly between -3 and 3		The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator	
Expected RSTD uncertainty for all neighbour cells	μs		5	The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD-Uncertainty index	
Cells in OTDOA		16 cells	in total	The list includes the reference	

assistance data		OTDOA neighbor cells include Cell 3 and other 14 cells on SCC	OTDOA neighbor cells include Cell 1 and other 7 cells on PCC, and Cell 3 and other 6 cells on SCC	cell (received in OTDOA-ReferenceCellInfo [24]) and 15 other cells, all received in OTDOA-ProvideAssistanceData [24]. Cell 1 (when included) appears at random places in the first half of the neighbour cell list in the OTDOA assistance data. Cell 3 always appears at random places in the second half of the list.
prs-SubframeOffset			on PCC: 310 except reference cell: 0	Subframe offset, counted in full subframes. The corresponding parameter in the OTDOA assistance data is prs- SubframeOffset specified in TS 36.355 [24]
slotNumberOffset			on PCC: 0 except reference cell: 0	The slot number offset at the transmitter between a neighbour cell and the assistance data reference cell. The corresponding parameter in the OTDOA assistance data is slotNumberOffset specified in TS 36.355 [24].
PRS muting info		Cell 1: '11110000' Cell 2: '00001111' Cell 3: '11110000'	Cell 1: '1111111100000000' Cell 2: '0000000011111111' Cell 3: '11111111100000000'	Correponds to prs-MutingInfo defined in TS 36.355 [24]
T1	s	3		The length of the time interval from the beginning of each test
T2	s	1.28	2.48	The length of the time interval that follows immediately after time interval T1
Т3	s	1.28	2.48	The length of the time interval that follows immediately after time interval T2

Table A.8.17.2.1-2: Cell-specific test parameters for E-UTRAN TDD RSTD measurement reporting delay under fading propagation conditions during T1 for carrier aggregation

Parameter	Unit	Cell 1	Cell 3				
E-UTRA RF Channel Number		1 N/A		N/A			
Correlation Matrix and Antenna Configuration		1x2 Low	1x2 Low	1x2 Low			
OCNG patterns defined in A.3.2.2		OP.1 TDD	N/A	N/A			
PBCH_RA PBCH_RB PSS_RA	-						
SSS_RA	 -						
PCFICH_RB PHICH_RA	dB	0	N/A	N/A			
PHICH_RB]						
PDCCH_RA PDCCH_RB OCNG_RA ^{Note 1}							
OCNG_RB ^{Note 1} N_{oc} Note 3	dBm/ 15 kHz	-95	N/A	N/A			
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{oc}$	dB	-Infinity	-Infinity	-Infinity			
lo Note 4	dBm/ 9 MHz	-67.22	N/A	N/A			
$\hat{\mathbf{E}}_{\mathrm{s}}/N_{oc}$	dB	0	-Infinity	-Infinity			
Propagation Condition Note 1: OCNG sha	all be used s	ETU30					

Note 1: OCNG shall be used such that active cell (Cell 1) is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2

Note 3: Interference from other cells and noise sources not specified in the test are assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: lo levels have been derived from other parameters and are given for information purpose. These are not settable test parameters.

Table A.8.17.2.1-3: Cell-specific test parameters for E-UTRAN TDD RSTD measurement reporting delay under fading propagation conditions during T2 and T3 for carrier aggregation

Parameter	Unit	Cell 1		Cell 2		Cell 3		
		T2	Т3	T2	Т3	T2	T3	
E-UTRA RF			1	2)		2	
Channel Number				2				
Correlation Matrix		1x2	2 Low	1x2	Low	1x2	Low	
and Antenna								
Configuration						00.0	1	
OCNG patterns		OP.	1 TDD	OP.2	TDD	OP.2	N/A	
defined in A.3.2.2						TDD		
PBCH_RA	1							
PBCH_RB								
PSS_RA	-							
SSS_RA	<u> </u>							
PCFICH_RB								
PHICH_RA	dB		0	0		0	N/A	
PHICH_RB	<u> </u>							
PDCCH_RA	<u> </u>							
PDCCH_RB								
OCNG_RA ^{Note 1}	<u> </u>							
OCNG_RB ^{Note 1}					1			
PRS_RA	dB	-6	N/A	N/A	3	3	N/A	
$N_{oc}^{ m Note 3}$	dBm/ 15 kHz	-98	-98	-98	-95	-98	-95	
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}$	dB	-4	-Infinity	-Infinity	-1	-8	-Infinity	
PRS $\hat{E}_{_{s}}/I_{_{ot}}^{}$ Note 4	dB	-4	-Infinity	-Infinity	-1	-8	-Infinity	
lo Note 4	dBm/ 9 MHz	-69.94	N/A	N/A	-66.68	-70.11	N/A	
PRP Note 4	dBm/ 15 kHz	-102	-Infinity	-Infinity	-96	-106	-Infinity	
RSRP	dBm/ 15 kHz	-96	-96	-105	-99	-109	-Infinity	
$\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}^{\mathrm{Note 4}}$	dB	2	2	-7	-4	-11	-Infinity	
Propagation Condition				ETU	J30			

Note 1: OCNG shall be used such that active cells (all, except Cell 3 in T3) are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols other than those in the subframes with transmitted PRS.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test are assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: If PRS_RA is not "N/A", \hat{E}_s/N_{oc} , PRS \hat{E}_s/I_{ot} , Io, RSRP and PRP levels have been derived from other parameters and are given for information purpose. If PRS_RA is "N/A", Io and RSRP levels have been derived from other parameters and are given for information purpose. These are not settable test parameters. Interference conditions shall be applied to all PRS symbols of DL positioning subframes.

Table A.8.17.2.1-4: DRX parameters for the test of E-UTRAN TDD intra-frequency RSTD measurement reporting delay under fading propagation conditions for carrier aggregation

Field	Value	Comment
onDurationTimer	psf1	
Drx-InactivityTimer	psf1	As appointed in
drx-RetransmissionTimer	sf1	- As specified in - TS 36.331 [2], Clause 6.3.2
longDRX-CycleStartOffset	sf320	13 30.331 [2], Clause 6.3.2
shortDRX	Disable	

A.8.17.2.2 Test Requirements

The RSTD measurement time fulfils the requirements specified in Clause 8.4.

In Test 1, the UE shall perform and report the RSTD measurements from Cell 2 and Cell 3 within 2560 ms starting from the beginning of time interval T2.

In Test 2, the UE shall perform and report the RSTD measurements from Cell 1 and Cell 2, and RSTD measurements from Cell 2 and Cell 3 within 4960 ms starting from the beginning of time interval T2.

The rate of the correct events for each neighbour cell observed during repeated tests shall be at least 90%, where the reported RSTD measurement for each correct event shall be within the RSTD reporting range specified in Clause 9.1.10.3, i.e., between RSTD 0000 and RSTD 12711.

NOTE: The RSTD measurement times in the tests are derived from the following expression,

$$T_{PRS}(M-1)+160\left\lceil\frac{n}{M}\right\rceil$$

where M =8 and n =16 for Test 1, and M =16 and n =16 for Test 2. For Test 1, the M and n parameters specified in Clause 8.1.2.5.1, Table 8.1.2.5.1-1, under Note 1, which gives the total RSTD measurement time of 2560 ms for Cell 3 with respect to the reference cell Cell 2. For Test 2, the M and n parameters are specified in Clause 8.1.2.6.1, Table 8.1.2.6.1-1, under Note 1, which gives the total RSTD measurement time of 4960 ms for reporting the RSTD measurements of Cell 1 and Cell 3 with respect to the reference cell Cell 2.

A.8.17.3 E-UTRAN FDD RSTD Measurement Reporting Test Case for 20 MHz

A.8.17.3.1 Test Purpose and Environment

The purpose of this test is the same as defined in Subclause A.8.17.1.1.

The parameters of this test are the same as defined in Subclause A.8.17.1.1 except that the values of the parameters in Table A.8.17.3.1-1, Table A.8.17.3.1-2 and Table A.8.17.3.1-1 will replace the values of the corresponding parameters in Table A.8.17.1.1-1, Table A.8.17.1.1-2 and Table A.8.17.1.1-3, respectively.

Note: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.17.3.1-1: General test parameters for E-UTRAN FDD RSTD measurement reporting delay under fading propagation conditions for carrier aggregation

Parameter	Unit	Value		Comment
		Test 1 Test 2		
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.10 FDD		As specified in section A.3.1.2.1
Channel Bandwidth (BW _{channel})	MHz	20		
PRS Transmission Bandwidth	RB		100	PRS are transmitted over the system bandwidth

Note 1: See Table A.8.17.1.1-1 for the other parameters.

This test verifies the RRM requirement which is independent of channel bandwidth and is performed Note 2: according to the principle defined in section A.3.6.1.

Table A.8.17.3.1-2: Cell-specific test parameters for E-UTRAN FDD RSTD measurement reporting delay under fading propagation conditions during T1 for carrier aggregation

OCNG patterns defined in A.3.2.1 OP.13 FDD N/A N/A Io Note 1 dBm/ -64.21 N/A N/A	Parameter	Cell 1	Cell 2	Cell 3
$1.10^{1.000}$		OP.13 FDI	N/A	N/A
18 MHz 54.21 14/1	lo Note 1	-64 21	N/A	N/A

Io levels have been derived from other parameters for information purposes. They are Note 1:

not settable parameters themselves.

Note 2: See Table A.8.17.1.1-2 for the other parameters.

Table A.8.17.3.1-3: Cell-specific test parameters for E-UTRAN FDD RSTD measurement reporting delay under fading propagation conditions during T2 and T3 for carrier aggregation

Parameter	Unit	Cell 1		Cell 2		Cell 3	
		T2	T3	T2	T3	T2	T3
OCNG patterns defined in A.3.2.1		OP.1	3 FDD	OP.14	FDD	OP.14 FDD	N/A
lo Note 1	dBm/ 18 MHz	-66.93	N/A	N/A	-63.67	-67.09	N/A

lo levels have been derived from other parameters for information purposes. They are Note 1: not settable parameters themselves.

See Table A.8.17.1.1-3 for the other parameters. Note 2:

A.8.17.3.2 **Test Requirements**

The test requirements defined in section A.8.17.1.2 shall apply in this test case.

A.8.17.4 E-UTRAN TDD RSTD Measurement Reporting Test Case for 20 MHz

A.8.17.4.1 Test Purpose and Environment

The purpose of this test is the same as defined in Subclause A.8.17.2.1.

The parameters of this test are the same as defined in Subclause A.8.17.2.1 except that the values of the parameters in Table A.8.17.4.1-1, Table A.8.17.4.1-2 and Table A.8.17.4.1-1 will replace the values of the corresponding parameters in Table A.8.17.2.1-1, Table A.8.17.2.1-2 and Table A.8.17.2.1-3, respectively.

Note: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.17.4.1-1: General test parameters for E-UTRAN TDD RSTD measurement reporting delay under fading propagation conditions for carrier aggregation

Parameter	Unit	Value		Comment
		Test 1 Test 2		
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.10 TDD		As specified in section A.3.1.2.2
Channel Bandwidth (BW _{channel})	MHz	20		
PRS Transmission Bandwidth	RB		100	PRS are transmitted over the system bandwidth

Note 1: See Table A.8.17.2.1-1 for the other parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.17.4.1-2: Cell-specific test parameters for E-UTRAN TDD RSTD measurement reporting delay under fading propagation conditions during T1 for carrier aggregation

Parameter	Unit	Cell 1	Cell 2	Cell 3
OCNG patterns defined in A.3.2.2		OP.7 TDD	N/A	N/A
lo Note 1	dBm/ 18 MHz	-64.21	N/A	N/A

Note 1: Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 2: See Table A.8.17.2.1-2 for the other parameters.

Table A.8.17.4.1-3: Cell-specific test parameters for E-UTRAN TDD RSTD measurement reporting delay under fading propagation conditions during T2 and T3 for carrier aggregation

Parameter	Unit	Cell 1		Cell 2		Cell 3	
		T2	T3	T2	T3	T2	T3
OCNG patterns defined in A.3.2.2		OP.7 TDD		OP.8 TDD		OP.8 TDD	N/A
lo Note 1	dBm/ 18 MHz	-66.93	N/A	N/A	-63.67	-67.09	N/A

Note 1: lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 2: See Table A.8.17.2.1-3 for the other parameters.

A.8.17.4.2 Test Requirements

The test requirements defined in section A.8.17.2.2 shall apply in this test case.

A.8.17.5 E-UTRAN FDD RSTD Measurement Reporting Test Case for 10MHz+5MHz

A.8.17.5.1 Test Purpose and Environment

The purpose of this test is the same as defined in Subclause A.8.17.1.1.

The parameters of this test are the same as defined in Subclause A.8.17.1.1 except that the values of the parameters in Table A.8.17.5.1-1, Table A.8.17.5.1-2 and Table A.8.17.5.1-1 will replace the values of the corresponding parameters in Table A.8.17.1.1-1, Table A.8.17.1.1-2 and Table A.8.17.1.1-3, respectively.

Note: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.17.5.1-1: General test parameters for E-UTRAN FDD RSTD measurement reporting delay under fading propagation conditions for carrier aggregation

Parameter	Unit	Va	Comment	
		Test 1	Test 2	
PCFICH/PDCCH/PHICH parameters		Cell 1: R.6 FDD Cell 2: R.11 FDD Cell 3: R.11 FDD	Cell 1: R.6 FDD Cell 2: R.11 FDD Cell 3: R.11 FDD	As specified in section A.3.1.2.1
Channel Bandwidth (BW _{channel})	MHz	Cell 1: 10 Cell 2: 5 Cell 3: 5	Cell 1: 10 Cell 2: 5 Cell 3: 5	
PRS Transmission Bandwidth	RB	Cell 1: 50 Cell 2: 25 Cell 3: 25	Cell 1: 50 Cell 2: 25 Cell 3: 25	PRS are transmitted over the system bandwidth

Note 1: See Table A.8.17.1.1-1 for the other parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.17.5.1-2: Cell-specific test parameters for E-UTRAN FDD RSTD measurement reporting delay under fading propagation conditions during T1 for carrier aggregation

Param	eter	Unit	Cell 1	Cell 2	Cell 3			
		dBm/	-67.22	N/A	N/A			
lo Note 1	9 MHz	-07.22	IN/A					
10	10		N/A	N/A	N/A			
	4.5MHz	IN/A	IN/A					
Note 1: I	Note 1: lo levels have been derived from other parameters for information purposes.							
_								

They are not settable parameters themselves.

Note 2: See Table A.8.17.1.1-2 for the other parameters.

Table A.8.17.5.1-3: Cell-specific test parameters for E-UTRAN FDD RSTD measurement reporting delay under fading propagation conditions during T2 and T3 for carrier aggregation

Parameter	Unit	Cell 1		Cell 2		Cell 3	
		T2	T3	T2	T3	T2	Т3
OCNG patterns defined in A.3.2.1		OP.	5 FDD	OP.19	FDD	OP.19 FDD	N/A
Note 1	dBm/ 9 MHz	-69.94	N/A	N/A	N/A	N/A	N/A
lo Note 1	dBm/ 4.5MHz	N/A	N/A	N/A	-69.69	-73.12	N/A

Note 1: Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 2: See Table A.8.17.1.1-3 for the other parameters.

A.8.17.5.2 Test Requirements

The test requirements defined in section A.8.17.1.2 shall apply in this test case.

A.8.17.6 E-UTRAN TDD RSTD Measurement Reporting Test Case for 10MHz+5MHz

A.8.17.6.1 Test Purpose and Environment

The purpose of this test is the same as defined in Subclause A.8.17.2.1.

The parameters of this test are the same as defined in Subclause A.8.17.2.1 except that the values of the parameters in Table A.8.17.6.1-1, Table A.8.17.6.1-2 and Table A.8.17.6.1-1 will replace the values of the corresponding parameters in Table A.8.17.2.1-1, Table A.8.17.2.1-2 and Table A.8.17.2.1-3, respectively.

Note: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.17.6.1-1: General test parameters for E-UTRAN TDD RSTD measurement reporting delay under fading propagation conditions for carrier aggregation

Parameter	Unit	Value		Comment
		Test 1	Test 2	
PCFICH/PDCCH/PHICH parameters		Cell 1: R.6 TDD Cell 2: R.11 TDD Cell 3: R.11 TDD	Cell 1: R.6 TDD Cell 2: R.11 TDD Cell 3: R.11 TDD	As specified in section A.3.1.2.2
Channel Bandwidth (BW _{channel})	MHz	Cell 1: 10 Cell 2: 5 Cell 3: 5	Cell 1: 10 Cell 2: 5 Cell 3: 5	
PRS Transmission Bandwidth	RB	Cell 1: 50 Cell 2: 25 Cell 3: 25	Cell 1: 50 Cell 2: 25 Cell 3: 25	PRS are transmitted over the system bandwidth

Note 1: See Table A.8.17.2.1-1 for the other parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.17.6.1-2: Cell-specific test parameters for E-UTRAN TDD RSTD measurement reporting delay under fading propagation conditions during T1 for carrier aggregation

Parameter	Unit	Cell 1	Cell 2	Cell 3	
lo Note 1 dBm/ 9 MHz		-67.22	N/A	N/A	
10	dBm/ 4.5MHz	N/A	N/A	N/A	

Note 1: lo levels have been derived from other parameters for information purposes.

They are not settable parameters themselves.

Note 2: See Table A.8.17.1.1-2 for the other parameters.

Table A.8.17.6.1-3: Cell-specific test parameters for E-UTRAN TDD RSTD measurement reporting delay under fading propagation conditions during T2 and T3 for carrier aggregation

Parameter	Unit	Cell 1		Cell 2		Cell 3	
		T2	T3	T2	T3	T2	Т3
OCNG patterns defined in A.3.2.1		OP.	1 TDD	OP.10	TDD	OP.10 TDD	N/A
lo Note 1	dBm/ 9 MHz	-69.94	N/A	N/A	N/A	N/A	N/A
10	dBm/ 4.5MHz	N/A	N/A	N/A	-69.69	-73.12	N/A

Note 1: Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 2: See Table A.8.17.1.1-3 for the other parameters.

A.8.17.6.2 Test Requirements

The test requirements defined in section A.8.17.2.2 shall apply in this test case.

A.8.17.7 E-UTRAN FDD RSTD Measurement Reporting Test Case for 5 + 5 MHz Bandwidth

A.8.17.7.1 Test Purpose and Environment

The purpose of this test is the same as defined in Subclause A.8.17.1.1.

The parameters of this test are the same as defined in Subclause A.8.17.1.1 except that the values of the parameters in Table A.8.17.7.1-1, Table A.8.17.7.1-2 and Table A.8.17.7.1-1 will replace the values of the corresponding parameters in Table A.8.17.1.1-1, Table A.8.17.1.1-2 and Table A.8.17.1.1-3, respectively.

This test verifies the RRM requirement which is independent of channel bandwidth and is performed Note: according to the principle defined in section A.3.6.1.

Table A.8.17.7.1-1: General test parameters for E-UTRAN FDD RSTD measurement reporting delay under fading propagation conditions for carrier aggregation

Parameter	Unit	Value		Comment
		Test 1	Test 2	
PCFICH/PDCCH/PHICH parameters		DL Reference Channel I	Measurement R.11 FDD	As specified in section A.3.1.2.1
Channel Bandwidth (BW _{channel})	MHz	5		
PRS Transmission Bandwidth	RB	25		PRS are transmitted over the system bandwidth

Note 1: See Table A.8.17.1.1-1 for the other parameters.

This test verifies the RRM requirement which is independent of channel bandwidth and is Note 2: performed according to the principle defined in section A.3.6.1.

Table A.8.17.7.1-2: Cell-specific test parameters for E-UTRAN FDD RSTD measurement reporting delay under fading propagation conditions during T1 for carrier aggregation

Parameter	Unit	Cell 1	Cell 2	Cell 3
OCNG patterns defined in A.3.2.1		OP.18 FDD	N/A	N/A
lo ^{Note 1}	dBm/ 4.5 MHz	-70.23	N/A	N/A

lo levels have been derived from other parameters for information purposes. Note 1: They are not settable parameters themselves.

See Table A.8.17.1.1-2 for the other parameters.

Note 2:

Table A.8.17.7.1-3: Cell-specific test parameters for E-UTRAN FDD RSTD measurement reporting delay under fading propagation conditions during T2 and T3 for carrier aggregation

Parameter	Unit	Cell 1		Cell 2		Cell 3	
		T2	T3	T2	T3	T2	T3
OCNG patterns defined in A.3.2.1		OP.1	8 FDD	OP.19	FDD	OP.19 FDD	N/A
lo Note 1	dBm/ 4.5 MHz	-72.95	N/A	N/A	-69.69	-73.12	N/A

lo levels have been derived from other parameters for information purposes. They are Note 1: not settable parameters themselves.

Note 2: See Table A.8.17.1.1-3 for the other parameters.

A.8.17.7.2 **Test Requirements**

The test requirements defined in section A.8.17.1.2 shall apply in this test case.

A.8.17.8 E-UTRAN TDD RSTD Measurement Reporting Test Case for 5+5 MHz bandwidth

A.8.17.8.1 Test Purpose and Environment

The purpose of this test is the same as defined in Subclause A.8.17.2.1.

The parameters of this test are the same as defined in Subclause A.8.17.2.1 except that the values of the parameters in Table A.8.17.8.1-1, Table A.8.17.8.1-2 and Table A.8.17.8.1-1 will replace the values of the corresponding parameters in Table A.8.17.2.1-1, Table A.8.17.2.1-2 and Table A.8.17.2.1-3, respectively.

Note: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.17.8.1-1: General test parameters for E-UTRAN TDD RSTD measurement reporting delay under fading propagation conditions for carrier aggregation

Parameter	Unit	Value		Comment
		Test 1 Test 2		
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.11 TDD		As specified in section A.3.1.2.1
Channel Bandwidth (BW _{channel})	MHz	5		
PRS Transmission Bandwidth	RB	25		PRS are transmitted over the system bandwidth

Note 1: See Table A.8.17.2.1-1 for the other parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.17.8.1-2: Cell-specific test parameters for E-UTRAN TDD RSTD measurement reporting delay under fading propagation conditions during T1 for carrier aggregation

Parameter	Unit	Cell 1	Cell 2	Cell 3
OCNG patterns defined in A.3.2.1		OP.9 TDD	N/A	N/A
Io Note 1	dBm/ 4.5 MHz	-70.23	N/A	N/A

Note 1: Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 2: See Table A.8.17.2.1-2 for the other parameters.

Table A.8.17.8.1-3: Cell-specific test parameters for E-UTRAN TDD RSTD measurement reporting delay under fading propagation conditions during T2 and T3 for carrier aggregation

Parameter	Unit	Cell 1		Cell 2		Cell 3	
		T2	T3	T2	T3	T2	T3
OCNG patterns defined in A.3.2.1		OP.	9 TDD	OP.10	TDD	OP.10 TDD	N/A
lo Note 1	dBm/ 4.5 MHz	-72.95	N/A	N/A	-69.69	-73.12	N/A

Note 1: lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 2: See Table A.8.17.2.1-3 for the other parameters.

A.8.17.8.2 Test Requirements

The test requirements defined in section A.8.17.2.2 shall apply in this test case.

A.8.17.9 E-UTRAN TDD RSTD Measurement Reporting Test Case for 20MHz+10MHz

A.8.17.9.1 Test Purpose and Environment

The purpose of this test is the same as defined in Subclause A.8.17.2.1.

The parameters of this test are the same as defined in Subclause A.8.17.2.1 except that the values of the parameters in Table A.8.17.9.1-1, Table A.8.17.9.1-2 and Table A.8.17.9.1-1 will replace the values of the corresponding parameters in Table A.8.17.2.1-1, Table A.8.17.2.1-2 and Table A.8.17.2.1-3, respectively.

Note: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.17.9.1-1: General test parameters for E-UTRAN TDD RSTD measurement reporting delay under fading propagation conditions for carrier aggregation

Parameter	Unit	Va	lue	Comment
		Test 1	Test 2	
PCFICH/PDCCH/PHICH parameters		Cell 1: R.10 TDD Cell 2: R.6 TDD Cell 3: R.6 TDD	Cell 1: R.10 TDD Cell 2: R.6 TDD Cell 3: R.6 TDD	As specified in section A.3.1.2.2
Channel Bandwidth (BW _{channel})	MHz	Cell 1: 20 Cell 2: 10 Cell 3: 10	Cell 1: 20 Cell 2: 10 Cell 3: 10	
PRS Transmission RB		Cell 1: 100 Cell 2: 50 Cell 3: 50	Cell 1: 100 Cell 2: 50 Cell 3: 50	PRS are transmitted over the system bandwidth

Note 1: See Table A.8.17.2.1-1 for the other parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.17.9.1-2: Cell-specific test parameters for E-UTRAN TDD RSTD measurement reporting delay under fading propagation conditions during T1 for carrier aggregation

Parameter	Unit	Cell 1	Cell 2	Cell 3
lo Note 1	dBm/ 18 MHz	-64.21	N/A	N/A
10	dBm/ 9 MHz	N/A	N/A	N/A

Note 1: lo levels have been derived from other parameters for information purposes.

They are not settable parameters themselves.

Note 2: See Table A.8.17.1.1-2 for the other parameters.

Table A.8.17.9.1-3: Cell-specific test parameters for E-UTRAN TDD RSTD measurement reporting delay under fading propagation conditions during T2 and T3 for carrier aggregation

Parameter	Unit	Cell 1		Cell 2		Cell 3	
		T2	T3	T2	T3	T2	Т3
OCNG patterns defined in A.3.2.1		OP.7 TDD		OP.2 TDD		OP.2 TDD	N/A
lo Note 1	dBm/ 18 MHz	-66.93	N/A	N/A	N/A	N/A	N/A
10	dBm/ 9MHz	N/A	N/A	N/A	-66.68	-70.11	N/A

Note 1: Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 2: See Table A.8.17.1.1-3 for the other parameters.

A.8.17.9.2 Test Requirements

The test requirements defined in section A.8.17.2.2 shall apply in this test case.

A.8.17.10 E-UTRAN 3 DL FDD CA RSTD Measurement Reporting Delay Test Case

A.8.17.10.1 Test Purpose and Environment

The purpose of the test case is to verify that the RSTD measurements meet the requirements specified in Clause 8.4 in a synchronized network environment with fading propagation conditions. This test case will verify the measurement period requirements specified in Clause 8.4.3 for RSTD measurements performed on the same secondary component carrier, the measurement period requirements for RSTD measurements performed on both the primary and secondary component carriers specified in Clause 8.4.4, and also the measurement period requirements for RSTD measurements performed on different secondary component carriers specified in Clause 8.4.5.

In the tests, there are three configured component carriers: PCC, SCC1 and SCC2, and four synchronous cells: Cell 1, Cell 2, Cell 3 and Cell 4. Cell 1 is PCell on the PCC, Cell 2 is SCell on the SCC1, Cell 3 is SCell on the SCC2 and Cell 4 is a neighbour cell on the SCC2. In all tests, Cell 3 is the OTDOA assistance data reference cell.

The test case includes two tests. Test 1 is designed for the scenario where the UE receives OTDOA assistance data with cells only on SCC2, and the UE is expected to report RSTD measurements performed on SCC2 only. Test 2 is designed for the scenario where the UE receives OTDOA assistance data with cells on PCC, SCC1 and SCC2, and the UE is expected to report RSTD measurements performed on PCC, SCC1 and SCC2.

Each test consists of three consecutive time intervals, with duration of T1, T2 and T3. Cell 1 is active in T1, T2 and T3, Cell 2 is active only in T2 and T3, Cell 3 is active only during T2 and T3, and Cell 4 is active only during T2. The beginning of the time interval T2 shall be aligned with the first PRS positioning subframe of a positioning occasion in the OTDOA assistance data reference cell, where the PRS positioning occasion is as defined in Clause 8.1.2.5.1. Cell 1 transmits PRS in T2, Cell 2 transmits PRS only in T3, and Cell 3 transmits PRS only in T3, and Cell 4 transmits PRS only in T2.

Note: The information on when PRS is muted is conveyed to the UE using PRS muting information.

The OTDOA assistance data as defined in TS 36.355, Clause 6.5.1.1, shall be provided to the UE during T1. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of T2, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data.

The test parameters are as given in Table A.8.17.10.1-1, Table A.8.17.10.1-2, Table A.8.17.10.1-3 and Table A.8.17.10.1-4.

Table A.8.17.10.1-1: General test parameters for E-UTRAN FDD RSTD measurement reporting delay under fading propagation conditions for carrier aggregation

Parameter	Unit	V	'alue	Comment
		Test 1	Test 2	
PCell		С	Cell 1	PCell is on RF channel 1 (PCC).
SCell 1		С	Cell 2	SCell 1 on RF channel 2 (SCC1).
SCell 2		C	Cell 3	SCell 2 on RF channel 3 (SCC2). Cell 3 is the assistance data reference cell.
Other neighbor cell		-	Cell 4	Neighbor cell on RF channel 3 (SCC2).
PCFICH/PDCCH/PHICH parameters			easurement Channel 6 FDD	As specified in clause A.3.1.2.1
PRS configuration index I_{PRS}		181 for all	cells on PCC cells on SCC1 cells on SCC2	This corresponds to periodicity of 320 ms and PRS subframe offset of $I_{\rm PRS}$ – 160 DL subframes, as defined in TS 36.211 [16], Table 6.10.4.3-1
Physical cell ID PCI		(PCI of Cell 3 – PCI of Cell 4)mod6=0		The PCIs of Cell 1 and Cell 2 are selected randomly. PCIs of Cell 3 and Cell 4 are selected randomly such that the relative subcarrier shifts of PRS patterns among these cells are as given by the condition
CP length		No	ormal	
DRX		ON		DRX parameters are further specified in Table A.8.17.10.1-3
Radio frame receive time offset between the cells at the UE antenna connector	μs	Cell 1 to Cell 2: 1 Cell 3 to Cell 2: -1 Cell 4 to Cell 2: 3		PRS are transmitted from synchronous cells
Time alignment errors between cell1, cell2 and cell3	μs		t error as specified in 1 [30] clause 6.5.3.1.	The value of time alignment error depends upon the type of carrier aggregation.
Expected RSTD	μs	Cell 4: 2 Other neighbour cells: randomly between -3 and 3	Cell 1: -2 Cell 2: 0 Cell 4: 2 Other neighbour cells: randomly between -3 and 3	The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator
Expected RSTD uncertainty for all neighbour cells	μs		5	The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD-Uncertainty index
Cells in OTDOA assistance data		OTDOA neighbor cells include Cell 4 and other 14 cells on SCC2 OTDOA neighbor cells include Cell 1 and other 3 cells on PCC, Cell 2 and other 3 cells on SCC1 and Cell 4 and other 6 cells on SCC2		The list includes the reference cell (received in OTDOA-ReferenceCellInfo [24]) and 15 other cells, all received in OTDOA-ProvideAssistanceData [24]. Cell 1 and Cell 2 (when included) appears at random places in the first half of the neighbour cell list in the OTDOA assistance data. Cell 4 always appears at random places in the second half of the list.

'prs-SubframeOffset		Cells o	on PCC: 310 n SCC1: 320 except reference cell: 0	Subframe offset, counted in full subframes. The corresponding parameter in the OTDOA assistance data is prs-SubframeOffset specified in TS 36.355 [24]
slotNumberOffset		Cells	on PCC: 0 on SCC1: 0 except reference cell: 0	The slot number offset at the transmitter between a neighbour cell and the assistance data reference cell. The corresponding parameter in the OTDOA assistance data is slotNumberOffset specified in TS 36.355 [24].
PRS muting info		Cell 1: '11110000' Cell 2: '00001111' Cell 3: '11110000' Cell 4: '00001111'	Cell 1: '1111111100000000' Cell 2: '0000000011111111' Cell 3: '1111111100000000' Cell 4: 0000000011111111'	Correponds to prs-MutingInfo defined in TS 36.355 [24]
T1	S		3	The length of the time interval from the beginning of each test
T2	S	1.28 2.48		The length of the time interval that follows immediately after time interval T1
Т3	S	1.28	2.48	The length of the time interval that follows immediately after time interval T2

Table A.8.17.10.1-2: Cell-specific test parameters for E-UTRAN FDD RSTD measurement reporting delay under fading propagation conditions during T1 for carrier aggregation

Parameter	Unit	Cell 1	Cell 2	Cell 3	Cell 4	
E-UTRA RF Channel Number		1	N/A	N/A	N/A	
Channel Bandwidth (BW _{channel})	MHz	5,10,20	N/A	N/A	N/A	
Correlation Matrix and Antenna Configuration		1x2 Low	1x2 Low	1x2 Low	1x2 Low	
PCFICH/PDCCH/PHICH parameters as specified in clause A.3.1.2.1		5MHz: R.11 FDD 10MHz: R.6 FDD 20MHz: R.10 FDD	N/A	N/A	N/A	
OCNG patterns defined in A.3.2.1		5MHz: OP.18 FDD 10MHz: OP.5 FDD 20MHz: OP.13 FDD	N/A	N/A	N/A	
PBCH_RA PBCH_RB						
PSS_RA SSS_RA						
PCFICH_RB						
PHICH_RA	dB	0	N/A	N/A	N/A	
PHICH_RB PDCCH_RA						
PDCCH_RB						
OCNG_RA ^{Note 1}						
OCNG_RB ^{Note 1}	dDm/					
$N_{oc}^{ m Note 3}$	dBm/ 15 kHz	-95	N/A	N/A	N/A	
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}$	dB	-Infinity	-Infinity	-Infinity	-Infinity	
lo ^{Note 4}	dBm/ 9 MHz	-67.22 +10log (N _{RB,c} /50)	N/A	N/A	N/A	
$\hat{\mathbf{E}}_{\mathrm{s}}/N_{oc}$	dB	0	-Infinity	-Infinity	-Infinity	
Propagation Condition		ETU30				

Note 1: OCNG shall be used such that active cell (Cell 1) is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test are assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: lo levels have been derived from other parameters and are given for information purpose. These are not settable test parameters.

Table A.8.17.10.1-3: Cell-specific test parameters for E-UTRAN FDD RSTD measurement reporting delay under fading propagation conditions during T2 and T3 for carrier aggregation

Parameter	Unit	Се	II 1	Се	II 2	Се	II 3	Cell 4	1
		T2	T3	T2	T3	T2	Т3	T2	T3
E-UTRA RF Channel Number		,	1	2	2	;	3	3	
Channel Bandwidth (BW _{channel})	MHz		0,20		0,20		0,20	5,10,2	
Correlation Matrix and Antenna Configuration		1x2	Low	1x2	Low	1x2	Low	1x2 Lo	W
PCFICH/PDCCH/PHICH parameters as specified in clause A.3.1.2.1		FI 10MH FI 20MHz	: R.11 DD z: R.6 DD z: R.10 DD	FI 10MH FI 20MH	: R.11 DD z: R.6 DD z: R.10 DD	FI 10MH FI 20MH:	:: R.11 DD Iz: R.6 DD z: R.10 DD	5MHz: R.11 FDD 10MHz: R.6 FDD 20MHz: R.10 FDD	N/A
OCNG patterns defined in A.3.2.1 (There is no PDSCH allocated in the subframe transmitting PRS)		FI 10MHz FI 20MHz	OP.18 DD z: OP.5 DD : OP.13	FI 10MHz FI 20MHz	OP.19 DD z: OP.6 DD : OP.14	FI 10MH; FI 20MHz	OP.19 DD z: OP.6 DD : OP.14	5MHz: OP.19 FDD 10MHz: OP.6 FDD 20MHz: OP.14 FDD	N/A
PRS Transmission Bandwidth (PRS transmission bandwidth depends on selected channel bandwidth. PRS are transmitted over the system bandwidth)	RB	10MF	z: 25 Hz: 50 Iz:100	10MF	z: 25 Hz: 50 Iz:100	10MF	z: 25 Hz: 50 Hz:100	5MHz: 25 10MHz: 50 20MHz:100	N/A
Number of consecutive downlink positioning subframes $N_{\rm PRS}$. $N_{\rm PRS}$ also depends on selected channel bandwidth. As defined in TS 36.211 [16]. The number of subframes in a positioning occasion		_	lz: 2 Hz: 1 Hz:1	10M	lz: 2 Hz: 1 Hz:1	10M	lz: 2 Hz: 1 Hz:1	5MHz: 2 10MHz: 1 20MHz:1	N/A
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB OCNG_RA ^{Note 1} OCNG_RB ^{Note 1}	dB	())		0	0	N/A
PRS_RA	dB	-6	N/A	N/A	3	N/A	3	3	N/A
$N_{oc}^{$	dBm/ 15 kHz	-98	-98	-98	-95	-98	-95	-98	-95
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}$	dB	-4	- Infinity	- Infinity	-1	- Infinity	-1	-8	- Infinity
PRS $\hat{E}_{_{\mathrm{S}}}/I_{_{\mathrm{ot}}}^{}$ Note 4	dB	-4	- Infinity	- Infinity	-1	- Infinity	-1	-8	- Infinity

lo Note 4	dBm/ 9 MHz	-69.94 +10log (N _{RB,c} /50)	N/A	N/A	-66.68 +10log (N _{RB,c} /50)	N/A	-66.68 +10log (N _{RB,c} /50)	-70.11 +10log (N _{RB,c} /50)	N/A
PRP Note 4	dBm/ 15 kHz	-102	- Infinity	- Infinity	-96	- Infinity	-96	-106	- Infinity
RSRP Note 4	dBm/ 15 kHz	-96	-96	-105	-99	-105	-99	-109	- Infinity
$\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}^{\mathrm{Note 4}}$	dB	2	2	-7	-4	-7	-4	-11	- Infinity
Propagation Condition		ETU30							

Note 1: OCNG shall be used such that active cells (all, except Cell 3 in T3) are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols other than those in the subframes with transmitted PRS.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 3: Interference from other cells and noise sources not specified in the test are assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: If PRS_RA is not "N/A", \hat{E}_s/N_{oc} , PRS \hat{E}_s/I_{ot} , Io, RSRP and PRP levels have been derived from other parameters and are given for information purpose. If PRS_RA is "N/A", Io and RSRP levels have been derived from other parameters and are given for information purpose. These are not settable test parameters. Interference conditions shall be applied to all PRS symbols of DL positioning subframes.

Table A.8.17.10.1-4: DRX parameters for the test of E-UTRAN FDD intra-frequency RSTD measurement reporting delay under fading propagation conditions for carrier aggregation

Field	Value	Comment
onDurationTimer	psf1	
Drx-InactivityTimer	psf1	As appointed in
drx-RetransmissionTimer	sf1	As specified in TS 36.331 [2], Clause 6.3.2
longDRX-CycleStartOffset	sf320	13 30.331 [2], Clause 6.3.2
shortDRX	Disable	

A.8.17.10.2 Test Requirements

The RSTD measurement time fulfils the requirements specified in Clause 8.4.

In Test 1, the UE shall perform and report the RSTD measurements from Cell 4 and Cell 3 within 2560 ms starting from the beginning of time interval T2.

In Test 2, the UE shall perform and report the RSTD measurements from Cell 1 and Cell 3, RSTD measurements from Cell 2 and Cell 3, and RSTD measurements from Cell 4 and Cell 3 within 4960 ms starting from the beginning of time interval T2.

The rate of the correct events for each neighbour cell observed during repeated tests shall be at least 90%, where the reported RSTD measurement for each correct event shall be within the RSTD reporting range specified in Clause 9.1.10.3, i.e., between RSTD_0000 and RSTD_12711.

NOTE: The RSTD measurement times in the tests are derived from the following expression,

$$T_{PRS}\left(M-1\right)+160\left\lceil\frac{n}{M}\right\rceil,$$

where M =8 and n =16 for Test 1, and M =16 and n =16 for Test 2. For Test 1, the M and n parameters specified in Clause 8.1.2.5.1, Table 8.1.2.5.1-1, under Note 1, which gives the total RSTD measurement time of 2560 ms for Cell 4 with respect to the reference cell Cell 3. For Test 2, the M and n parameters are specified in Clause 8.1.2.6.1, Table 8.1.2.6.1-1, under Note 1, which gives the total RSTD measurement time of 4960 ms for reporting the RSTD measurements of Cell 1, Cell 2 and Cell 4 with respect to the reference cell Cell 3.

A.8.17.11 E-UTRAN 3 DL TDD CA RSTD Measurement Reporting Delay Test Case

A.8.17.11.1 Test Purpose and Environment

The purpose of the test case is to verify that the RSTD measurements meet the requirements specified in Clause 8.4 in a synchronized network environment with fading propagation conditions. This test case will verify the measurement period requirements specified in Clause 8.4.3 for RSTD measurements performed on the same secondary component carrier, the measurement period requirements for RSTD measurements performed on both the primary and secondary component carriers specified in Clause 8.4.4, and also the measurement period requirements for RSTD measurements performed on different secondary component carriers specified in Clause 8.4.5.

In the tests, there are three configured component carriers: PCC, SCC1 and SCC2, and four synchronous cells: Cell 1, Cell 2, Cell 3 and Cell 4. Cell 1 is PCell on the PCC, Cell 2 is SCell on the SCC1, Cell 3 is SCell on the SCC2 and Cell 4 is a neighbour cell on the SCC2. In all tests, Cell 3 is the OTDOA assistance data reference cell.

The test case includes two tests. Test 1 is designed for the scenario where the UE receives OTDOA assistance data with cells only on SCC2, and the UE is expected to report RSTD measurements performed on SCC2 only. Test 2 is designed for the scenario where the UE receives OTDOA assistance data with cells on PCC, SCC1 and SCC2, and the UE is expected to report RSTD measurements performed on PCC, SCC1 and SCC2.

Each test consists of three consecutive time intervals, with duration of T1, T2 and T3. Cell 1 is active in T1, T2 and T3, Cell 2 is active only in T2 and T3, Cell 3 is active only during T2 and T3, and Cell 4 is active only during T2. The beginning of the time interval T2 shall be aligned with the first PRS positioning subframe of a positioning occasion in the OTDOA assistance data reference cell, where the PRS positioning occasion is as defined in Clause 8.1.2.5.1. Cell 1 transmits PRS in T2, Cell 2 transmits PRS only in T3, and Cell 3 transmits PRS only in T3, and Cell 4 transmits PRS only in T2.

Note: The information on when PRS is muted is conveyed to the UE using PRS muting information.

The OTDOA assistance data as defined in TS 36.355, Clause 6.5.1.1, shall be provided to the UE during T1. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of T2, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data.

The test parameters are as given in Table A.8.17.11.1-1, Table A.8.17.11.1-2, Table A.8.17.11.1-3 and Table A.8.17.11.1-4.

Table A.8.17.11.1-1: General test parameters for E-UTRAN TDD RSTD measurement reporting delay under fading propagation conditions for carrier aggregation

Parameter	Unit	Value		Comment
		Test 1	Test 2	

PCell		Ce	ell 1	PCell is on RF channel 1 (PCC).
SCell 1			ll 2	SCell 1 on RF channel 2 (SCC1).
				SCell 2 on RF channel 3 (SCC2).
SCell 2		Cell 3		Cell 3 is the assistance data
				reference cell.
Other neighbor cell		Ce	ell 4	Neighbor cell on RF channel 3
PCFICH/PDCCH/PHIC		DI Poforonoo	Measurement	(SCC2).
H parameters			R.6 TDD	As specified in clause A.3.1.2.2
Channel Bandwidth				All channels in a test have the same
(BW _{channel})	MHz	5MHz or 10M	lHz or 20MHz	bandwidth.
				This corresponds to periodicity of
PRS configuration index		174 for all o	ells on PCC	320 ms and PRS subframe offset of
I _{PRS}		184 for all ce	ells on SCC1	I_{PRS} -160 DL subframes, as
*PRS		194 for all ce	ells on SCC2	defined in TS 36.211 [16], Table
				6.10.4.3-1
				The PCIs of Cell 1 and Cell 2 are
				selected randomly. PCIs of Cell 3
Physical cell ID PCI		,	B – PCI of Cell	and Cell 4 are selected randomly
		4)mc	od6=0	such that the relative subcarrier shifts of PRS patterns among these
				cells are as given by the condition
				As specified in TS 36.211 [16],
				Clause 4.2; corresponds to a
TDD uplink-downlink			1	configuration with 5 ms switch-point
configuration				periodicity and two downlink
				consecutive subframes
				As specified in TS 36.211 [16],
TDD special subframe			6	Clause 4.2; corresponds to DwPTS
configuration		'	J	of $19760 \cdot T_{\mathrm{s}}$ and UpPTS of
				$4384 \cdot T_{\rm s}$
CP length		Nor	mal	
DRX		С	N	DRX parameters are further
Dadio frama rassiva				specified in Table A.8.17.11.1-3
Radio frame receive time offset between the		Cell 1 to		PRS are transmitted from
cells at the UE antenna	μs		Cell 2: -1 Cell 2: 3	synchronous cells
connector				
Time alignment errors		•	ment error as	The value of time alignment error
among cell1, cell2 and cell3	μs		P TS 36.104 [30] 6.5.3.1.	depends upon the type of carrier aggregation.
Celio		Clause	Cell 1: -2	aggregation.
		Cell 4: 2	Cell 2: 0	The expected RSTD is what is
		Other	Cell 4: 2	expected at the receiver. The
Expected DCTD		neighbour cells:	Other	corresponding parameter in the
Expected RSTD µ		randomly	neighbour cells:	OTDOA assistance data specified in
		between -3 and	randomly	TS 36.355 [24] is the
		3	between -3 and	expectedRSTD indicator
			3	The corresponding parameter in the
Expected RSTD				The corresponding parameter in the OTDOA assistance data specified in
uncertainty for all	μs		5	TS 36.355 [24] is the
neighbour cells				expectedRSTD-Uncertainty index
<u> </u>				Expediento i D-Officertainty index
Cells in OTDOA		40 "	s in total	The list includes the reference cell

		OTDOA neighbor cells include Cell 4 and other 14 cells on SCC2	OTDOA neighbor cells include Cell 1 and other 3 cells on PCC, Cell 2 and other 3 cells on SCC1 and Cell 4 and other 6 cells on SCC2	ReferenceCellInfo [24]) and 15 other cells, all received in OTDOA-ProvideAssistanceData [24]. Cell 1 and Cell 2 (when included) appears at random places in the first half of the neighbour cell list in the OTDOA assistance data. Cell 4 always appears at random places in the second half of the list.
prs-SubframeOffset		Cells on PCC: 310 Cells on SCC1: 320 Cells on SCC2, except reference cell: 0		Subframe offset, counted in full subframes. The corresponding parameter in the OTDOA assistance data is prs-SubframeOffset specified in TS 36.355 [24]
slotNumberOffset		Cells on PCC: 0 Cells on SCC1: 0 Cells on SCC2, except reference cell: 0		The slot number offset at the transmitter between a neighbour cell and the assistance data reference cell. The corresponding parameter in the OTDOA assistance data is slotNumberOffset specified in TS 36.355 [24].
PRS muting info		Cell 1: '11110000' Cell 2: '00001111' Cell 3: '11110000' Cell 4: '00001111'	Cell 1: '11111111000 00000' Cell 2: '00000000111 11111' Cell 3: '11111111000 00000' Cell 4: 00000000111 11111'	Correponds to prs-MutingInfo defined in TS 36.355 [24]
T1	S	3		The length of the time interval from the beginning of each test
Т2	S	1.28	2.48	The length of the time interval that follows immediately after time interval T1
ТЗ	S	1.28	2.48	The length of the time interval that follows immediately after time interval T2

Table A.8.17.11.1-2: Cell-specific test parameters for E-UTRAN TDD RSTD measurement reporting delay under fading propagation conditions during T1 for carrier aggregation

Parameter	Unit	Cell 1	Cell 2	Cell 3	Cell 4
E-UTRA RF Channel		1	N/A	N/A	N/A
Number		'	14// (14/71	14// (
Channel Bandwidth (BW _{channel})	MHz	5,10,20	N/A	N/A	N/A
Correlation Matrix and		1x2 Low	1x2 Low	1x2 Low	1x2 Low
Antenna Configuration					
		5MHz: R11			
PCFICH/PDCCH/PHICH		TDD			
parameters as specified		10MHz: R6	N/A	N/A	N/A
in clause A.3.1.2.1		TDD	,, .		,,
0.0.000 /01 /		20MHz: R10			
		TDD			
		5MHz: OP.10			
		TDD			
OCNG patterns defined		10MHz: OP.1	N/A	N/A	N/A
in A.3.2.2		TDD			
		20MHz: OP.7			
		TDD			
PBCH_RA					
PBCH_RB					
PSS_RA					
SSS_RA					
PCFICH_RB		_			
PHICH_RA	dB	0	N/A	N/A	N/A
PHICH_RB					
PDCCH_RA					
PDCCH_RB					
OCNG_RA ^{Note 1}					
OCNG_RB ^{Note 1}	ID /				
$N_{oc}^{ m Note 3}$	dBm/ 15 kHz	-95	N/A	N/A	N/A
PRS $\hat{\mathbf{E}}_{\mathrm{s}}/N_{\mathit{oc}}$	dB	-Infinity	-Infinity	-Infinity	-Infinity
	dBm/	-67.22			
Io Note 4	9 MHz	+10log	N/A	N/A	N/A
	3 IVII IZ	(N _{RB,c} /50)			
$\hat{\mathbf{E}}_{s}/N_{oc}$	dB	0	-Infinity	-Infinity	-Infinity
Propagation Condition		ETU30			
	<u> </u>				

Note 1: OCNG shall be used such that active cell (Cell 1) is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test are assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: lo levels have been derived from other parameters and are given for information purpose. These are not settable test parameters.

Table A.8.17.11.1-3: Cell-specific test parameters for E-UTRAN TDD RSTD measurement reporting delay under fading propagation conditions during T2 and T3 for carrier aggregation

Parameter	Unit	Ce	II 1		II 2	Се	II 3	Cell 4	,
		T2	T3	T2	Т3	T2	Т3	T2	Т3

E-UTRA RF Channel Number		1	l	2	2	;	3	3	
Correlation Matrix and Antenna Configuration		1x2 Low		1x2	Low	1x2	Low	1x2 Lo	w
Channel Bandwidth (BW _{channel})	MHz	5,10),20	5,10	0,20	5,10	0,20	5,10,2	0
PCFICH/PDCCH/PHICH parameters as specified in clause A.3.1.2.1		5MHz TE 10MH TE 20MH:	DD Iz: R6 DD z: R10	TI 10MH TI 20MH	:: R11 DD Iz: R6 DD z: R10 DD	TI 10MH TI 20MH	z: R11 DD Hz: R6 DD z: R10 DD	5MHz: R11 TDD 10MHz: R6 TDD 20MHz: R10 TDD	N/A
OCNG patterns defined in A.3.2.1		TE 10MHz TE	:: OP.1)D :: OP.7	TE 10MHz TE 20MHz	OP.10 DD :: OP.1 DD :: OP.7	TI 10MHz TI 20MHz	OP.10 DD z: OP.1 DD z: OP.7	5MHz: OP.10 TDD 10MHz: OP.1 TDD 20MHz: OP.7 TDD	N/A
PRS Transmission Bandwidth (PRS transmission bandwidth depends on selected channel bandwidth. PRS are transmitted over the system bandwidth)	RB	_	z: 25 Hz: 50 Hz:100	10MF	z: 25 Hz: 50 Hz:100	10MF	z: 25 Hz: 50 Hz:100	5MHz: 25 10MHz: 50 20MHz:100	N/A
Number of consecutive downlink positioning subframes $^{N_{\mathrm{PRS}}}$. $^{N_{\mathrm{PRS}}}$ also depends on selected channel bandwidth. As defined in TS 36.211 [16]. The number of subframes in a positioning occasion		5MH 10MI 20M		_	lz: 2 Hz: 1 Hz:1	10M	Hz: 2 Hz: 1 Hz:1	5MHz: 2 10MHz: 1 20MHz:1	N/A
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RA PDCCH_RB OCNG_RA OCNG_RB Note 1	dB	()	()		0	0	N/A
PRS_RA	dB	-6	N/A	N/A	3	N/A	3	3	N/A
$N_{oc}^{ m Note 3}$	dBm/ 15 kHz	-98	-98	-98	-95	-98	-95	-98	-95
						1		T .	
PRS $\hat{\mathbf{E}}_{\mathrm{s}}/N_{\mathit{oc}}$	dB	-4	- Infinity	- Infinity	-1	- Infinity	-1	-8	- Infinity

Io Note 4	dBm/ 9 MHz	-69.94 +10log (N _{RB,c} /50)	N/A	N/A	-66.68 +10log (N _{RB,c} /50)	N/A	-66.68 +10log (N _{RB,c} /50)	-70.11 +10log (N _{RB,c} /50)	N/A
PRP Note 4	dBm/ 15 kHz	-102	- Infinity	- Infinity	-96	- Infinity	-96	-106	- Infinity
RSRP Note 4	dBm/ 15 kHz	-96	-96	-105	-99	-105	-99	-109	- Infinity
$\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}^{\mathrm{Note 4}}$	dB	2	2	-7	-4	-7	-4	-11	- Infinity
Propagation Condition					Е	TU30			

- Note 1: OCNG shall be used such that active cells (all, except Cell 3 in T3) are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols other than those in the subframes with transmitted PRS.
- Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.
- Note 3: Interference from other cells and noise sources not specified in the test are assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
- Note 4: If PRS_RA is not "N/A", \hat{E}_s/N_{oc} , PRS \hat{E}_s/I_{ot} , Io, RSRP and PRP levels have been derived from other parameters and are given for information purpose. If PRS_RA is "N/A", Io and RSRP levels have been derived from other parameters and are given for information purpose. These are not settable test parameters. Interference conditions shall be applied to all PRS symbols of DL positioning subframes

Table A.8.17.11.1-4: DRX parameters for the test of E-UTRAN TDD intra-frequency RSTD measurement reporting delay under fading propagation conditions for carrier aggregation

Field	Value	Comment
onDurationTimer	psf1	
Drx-InactivityTimer	psf1	As appointed in
drx-RetransmissionTimer	sf1	As specified in TS 36.331 [2], Clause 6.3.2
longDRX-CycleStartOffset	sf320	- 13 30.331 [2], Clause 0.3.2
shortDRX	Disable	

A.8.17.11.2 Test Requirements

The RSTD measurement time fulfils the requirements specified in Clause 8.4.

In Test 1, the UE shall perform and report the RSTD measurements from Cell 4 and Cell 3 within 2560 ms starting from the beginning of time interval T2.

In Test 2, the UE shall perform and report the RSTD measurements from Cell 1 and Cell 3, RSTD measurements from Cell 2 and Cell 3, and RSTD measurements from Cell 4 and Cell 3 within 4960 ms starting from the beginning of time interval T2.

The rate of the correct events for each neighbour cell observed during repeated tests shall be at least 90%, where the reported RSTD measurement for each correct event shall be within the RSTD reporting range specified in Clause 9.1.10.3, i.e., between RSTD_0000 and RSTD_12711.

NOTE: The RSTD measurement times in the tests are derived from the following expression,

$$T_{PRS}(M-1)+160\left\lceil\frac{n}{M}\right\rceil,$$

where M =8 and n =16 for Test 1, and M =16 and n =16 for Test 2. For Test 1, the M and n parameters specified in Clause 8.1.2.5.1, Table 8.1.2.5.1-1, under Note 1, which gives the total RSTD measurement time of 2560 ms for Cell 4 with respect to the reference cell Cell 3. For Test 2, the M and n parameters are specified in Clause 8.1.2.6.1, Table 8.1.2.6.1-1, under Note 1, which gives the total RSTD measurement time of 4960 ms for reporting the RSTD measurements of Cell 1, Cell 2 and Cell 4 with respect to the reference cell Cell 3.

A.8.18 E-UTRAN TDD – HRPD Measurements

A.8.18.1 E-UTRAN TDD-HRPD event triggered reporting under fading propagation conditions

A.8.18.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the E-UTRAN TDD- HRPD cell search requirements in clause 8.1.2.4.12.

The test parameters are given in Tables A.8.18.1.1-1, A.8.18.1.1-2 and A.8.18.1.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.18.1.1-1: General test parameters for E-UTRAN TDD to HRPD event triggered reporting under fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Active cell		Cell 1	E-UTRAN TDD cell
Neighbouring cell		Cell 2	HRPD cell
Gap Pattern Id		1	As specified in TS 36.133 clause 8.1.2.1.
E-UTRAN TDD measurement quantity		RSRP	
Inter-RAT (HRPD) measurement quantity		CDMA2000 HRPD Pilot Strength	
b1-ThresholdCDMA2000	dB	-7	Absolute 'CDMA2000 HRPD Pilot Strength' threshold for event B1
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	Non-DRX test
Access Barring Information	-	Not sent	No additional delays in random access procedure
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BWchannel)	MHz	10	
Uplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
HRPD RF Channel Number		1	One HRPD carrier frequency is used.
HRPD neighbour cell list size		8	HRPD cells on HRPD RF channel 1 provided in the cell list before T2.
cdma2000-SearchWindowSize		8 (60 PN chips)	Search window size as defined in clause 6.3.5 in TS 36.331
T1	S	5	
T2	S	3	

Table A.8.18.1.1-2: Cell specific test parameters for E-UTRAN TDD cell#1 for event triggered reporting under fading propagation conditions

Parameter	Unit	Cell 1 (E-UTRA)			
		T1	T2		
E-UTRA RF Channel		,			
number					
BW _{channel}	MHz	1	0		
Correlation Matrix and		1x2	Low		
Antenna Configuration					
OCNG Patterns defined in		OP.1	TDD		
TS36.133 A.3.2.2.1 (OP.1					
TDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$N_{oc}^{ m Note~2}$	dBm/15	-9	98		
	kHz				
RSRP Note 3	dBm/15	-98	-98		
	KHz				
\hat{E}_s/N_{oc}	dB	0	0		
\hat{E}_s/I_{ot}	dB	0	0		
Propagation Condition		ETI			
constant total tran OFDM symbols.	smitted powe	both cells are fully a r spectral density is	achieved for all		

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.18.1.1-3: Cell specific test parameters for HRPD (cell # 2) for event triggered reporting under fading propagation conditions

Parameter	Unit	Cell 2	(HRPD)
		T1	T2
$\frac{\text{Control} E_{b}}{N_{t}} (38.4 \text{ kbps})$	dB	2	21
$\frac{\text{Control} E_b}{N_t} $ (76.8 kbps)	dB	1	8
\hat{I}_{or}/I_{oc}	dB	-infinity	0
I_{oc}	dBm/1.2288 MHz		55
CDMA2000 HRPD Pilot Strength	dB	-infinity	-3
Propagation Condition		ET	U70

A.8.18.1.2 Test Requirements

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 2134 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.19 E-UTRAN TDD – CDMA2000 1X Measurements

A.8.19.1 E-UTRAN TDD – CDMA2000 1X event triggered reporting under fading propagation conditions

A.8.19.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the E-UTRAN TDD- CDMA2000 1X cell search requirements in clause 8.1.2.4.10.

The test parameters are given in Tables A.8.19.1.1-1, A.8.19.1.1-2 and A.8.19.1.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.19.1.1-1: General test parameters for E-UTRAN TDD-CDMA2000 1X event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2.
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2.
Gap Pattern Id		1	As specified in TS 36.133 clause 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on CDMA2000 1X RF channel number 1.
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. Applicable to cell 1.
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211. Applicable to cell 1.
CP length		Normal	Applicable to cell 1.
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA Channel Bandwidth (BW _{channel})	MHz	10	
CDMA2000 1X Channel Number		1	One CDMA2000 1X carrier frequency is used.
Inter-RAT (CDMA2000 1X) measurement quantity		CDMA2000 1xRTT Pilot Strength	
B1-Threshold-CDMA2000	dB	-14	Absolute 'CDMA2000 1xRTT Pilot Strength' threshold for event B1
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
cdma2000 1X neighbour cell list size		8	cdma2000 1X cells on cdma2000 1X RF channel 1 provided in the cell list before T2.
cdma2000-SearchWindowSize		8 (60 PN chips)	Search window size as defined in clause 6.3.5 in TS 36.331
T1	S	5	
T2	S	3	

Table A.8.19.1.1-2: Cell specific test parameters for E-UTRAN TDD (cell # 1) for event triggered reporting of CDMA2000 1X cell under fading propagation conditions

Parameter	Unit	Cell 1
		T1 T2
E-UTRA RF Channel Number		1
BW _{channel}	MHz	10
Correlation Matrix and		1x2 Low
Antenna Configuration		
OCNG Pattern defined in		
A.3.2.2.1 (OP.1 TDD)		OP.1 TDD
PBCH_RA	dB	
PBCH_RB	dB	
PSS_RA	dB	
SSS_RA	dB	
PCFICH_RB	dB	
PHICH_RA	dB	_
PHICH_RB	dB	0
PDCCH_RA	dB	
PDCCH_RB	dB	
PDSCH_RA	dB	
PDSCH_RB	dB	
OCNG_RA ^{Note 1}	dB	
OCNG_RB ^{Note 1}	dB	
\hat{E}_{s}/I_{ot}	dB	4 4
\hat{E}_s/N_{oc}	dB	4 4
N _{oc}	dBm/15 kHz	-98
RSRP	dBm/15 kHz	-94 -94
SCH_RP	dBm/15 kHz	-94 -94
Propagation Condition		ETU70
Note 1: OCNG shall be used	auch that both o	alls are fully allocated and a constant total transmitted power

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Table A.8.19.1.1-3: Cell specific test parameters for CDMA2000 1X (cell # 2) for event triggered reporting of CDMA2000 1X cell under fading propagation conditions

Parameter	Unit	Cell 2 (cdm	na2000 1X)
		T1	T2
Pilot E _c I _{or}	dB	-7	
Sync E _c I _{or}	dB	-16	
$\frac{\text{Paging} \text{E}_{c}}{\text{I}_{or}} \text{(4.8 kbps)}$	dB	-12	
\hat{I}_{or}/I_{oc}	dB	-infinity 0	
I_{oc}	dBm/1.2288 MHz	-55	
CDMA2000 1xRTT Pilot Strength	dB	-infinity -10	
Propagation Condition		ETU	J70

A.8.19.1.2 Test Requirements

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 2134 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTIDCCH higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.20 Inter-frequency/RAT Measurements in CA mode

A.8.20.1 E-UTRAN FDD-FDD Inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells

It is not necessary for CA UEs to be tested in A.8.3.1 if this case is done.

A.8.20.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the FDD-FDD inter-frequency cell search requirements in clause 8.1.2.3.

The test parameters are given in Tables A.8.20.1.1-1 and A.8.20.1.1-2. In this test, there are three cells on different carrier frequencies and gap pattern configuration # 0 as defined in Table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.20.1.1-1: General test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
E-UTRA RF Channel Number		1, 2	Two FDD carrier frequencies are used.
E-UTRA RF Channel Number for Scell		3	One FDD carrier frequencies is used
Channel Bandwidth (BWchannel)	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2	Cell 2 is on RF channel number 2
Configured active Scell		Cell 3	Cell 3 is on RF channel number 3
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
A3-Offset	dB	-6	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Cell2 timing offset to cell1	ms	3	Asynchronous cells
Cell3 timing offset to cell1	μs	0	Synchronous cells
Time alignment error between cell3 and cell1	μs	≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1.	The value of time alignment error depends upon the type of carrier aggregation.
T1	S	5	
T2	S	5	

Table A.8.20.1.1-2: Cell specific test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Cel	II 1	Cell 2		Cell 3	
		T1	T2	T1	T2	T1	T2
E-UTRA RF		1			2	3	3
Channel Number							
BW _{channel}	MHz	10		10		10	
Correlation Matrix		1x2 Low		1x2 Low		1x2 Low	
and Antenna							
Configuration							
OCNG Patterns							
defined in		OP.1 FDD		OP.2 FDD		OP.1 FDD	
A.3.2.1.1 (OP.1							
FDD) and in							
A.3.2.1.2 (OP.2							
FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB					0	
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB	0		0			
PDCCH_RA	dB]					
PDCCH_RB	dB]					
PDSCH_RA	dB	1					
PDSCH_RB	dB	1					
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$N_{oc\ ext{Note 3}}$	dBm/15 kHz	-98					
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	-94	-94
\hat{E}_{s}/I_{ot}	dB	4	4	-Infinity	7	4	4
SCH_RP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	-94	-94
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7	4	4
Propagation Condition		ETU70					
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.							

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{\it ac}$ to be fulfilled.

RSRP and SCH RP levels have been derived from other parameters for information purposes. They are not Note 4: settable parameters themselves

A.8.20.1.2 **Test Requirements**

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 3840 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement NOTE: reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.20.2 E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

It is not necessary for CA UEs to be tested in A.8.4.1 if this case is done.

A.8.20.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the TDD-TDD inter-frequency cell search requirements in clause 8.1.2.3.4.

The test parameters are given in Table A.8.20.2.1-1 and A.8.20.2.1-2 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.20.2.1-1: General test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
Gap Pattern Id		1	As specified in TS 36.133 clause 8.1.2.1.
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in TS 36.211 clause 4.2 Table 4.2-2
CP length		Normal	
E-UTRA RF Channel Number		1, 2	Two TDD carrier frequencies are used.
E-UTRA RF Channel Number for Scell		3	One TDD carrier frequencies is used
Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2	Cell 2 is on RF channel number 2
Configured active Scell		Cell 3	Cell 3 is on RF channel number 3
A3-Offset	dB	-6	
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Cell2 timing offset to cell1	μs	3	Synchronous cells
Cell3 timing offset to cell1	μs	0	Synchronous cells
Time alignment error between cell3 and cell1	μs	≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1.	The value of time alignment error depends upon the type of carrier aggregation.
T1	S	5	
T2	s	10	

Table A.8.20.2.1-2: Cell specific test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Cel	I 1	Cell 2		Cell 3		
		T1	T2	T1	T2	T1	T2	
E-UTRA RF		1			2	;	3	
Channel Number								
BW _{channel}	MHz	10	0	1	0	1	0	
Correlation Matrix		1x2	Low	1x2	Low	1x2	Low	
and Antenna								
Configuration								
OCNG Pattern								
defined in		OP.1	TDD	OP.2	? TDD	OP.1	TDD	
A.3.2.2.1 (OP.1								
TDD) and in								
A.3.2.2.2 (OP.2)								
PBCH_RA	dB							
PBCH_RB	dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH_RB	dB							
PHICH_RA	dB			0		0		
PHICH_RB	dB	C	1					
PDCCH_RA	dB							
PDCCH_RB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	-Infinity	7	4	4	
$N_{oc}^{ m Note~3}$	dBm/15 kHz				-98			
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-91	-94	-94	
SCH_RP Note 4	dBm/15 kHz	-94	-94	-infinity	-91	-94	-94	
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7	4	4	
Propagation		ETU70						
Condition								
Note 1: OCNG sh	nall be used such	that both cell	s are fully al	located and a c	onstant total tra	ansmitted powe	r spectral	
	achieved for all C					•	-	

Note 2: The resources for uplink transmission are assigned to the UE priori to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.20.2.2 **Test Requirements**

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 7680 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.20.2A E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation conditions in synchronous cells for 20 MHz +20 MHz bandwidth.

A.8.20.2A.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.20.2. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.20.2A.1-1 and A.8.20.2A.1-2 will replace the values of corresponding parameters in Tables A.8.20.2.1-1 and A.8.20.2.1-2.

Table A.8.20.2A.1-1: General test parameters for E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation conditions in synchronous cells for 20 MHz +20 MHz bandwidth

Parameter	Unit	Value	Comment					
PDSCH parameters		DL Reference Measurement	As specified in clause A.3.1.1.2					
		Channel R.3 TDD						
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.2					
parameters		Channel R.10 TDD	·					
Channel Bandwidth (BW _{channel})	MHz	20						
Note 1: See Table A.8.20.2.1-1 for other general test parameters.								
Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according								
to the principle define	to the principle defined in section A.3.6.1.							

Table A.8.20.2A.1-2: Cell specific test parameters for E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation conditions in synchronous cells for 20 MHz +20 MHz bandwidth

Parameter	Unit	Cell 1		Cell 2		Cell 3	
		T1	T2	T1	T2	T1	T2
BW _{channel}	MHz	20			20	20	
OCNG Pattern							
defined in A.3.2.2		OP.7 TDD OP.8 TDD OP.7 TDD					
Note 1: See Table A.8.20.2.1-1 for other general test parameters.							

A.8.20.2A.2 Test Requirements

The test requirements defined in section A.8.20.2.2 shall apply to this test case.

A.8.20.2B E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation conditions in synchronous cells for 20 MHz +10 MHz bandwidth.

A.8.20.2B.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.8.20.2. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8.20.2B.1-1 and A.8.20.2B.1-2 will replace the values of corresponding parameters in Tables A.8.20.2.1-1 and A.8.20.2.1-2.

Table A.8.20.2B.1-1: General test parameters for E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation conditions in synchronous cells for 20 MHz +10 MHz bandwidth

Parameter	Unit	Value	Comment		
Channel bandwidth for Cell 1 (BW _{channel})	MHz	20			
PDSCH parameters for Cell 1		DL Reference Measurement	As specified in section		
		Channel R.3 TDD	A.3.1.1.2		
PCFICH/PDCCH/PHICH parameters for		DL Reference Measurement	As specified in section		
Cell 1		Channel R.10 TDD	A.3.1.2.2		
Channel bandwidth for Cells 2, 3	MHz	10			
(BW _{channel})	IVII IZ	10			
PDSCH parameters for Cells 2, 3		DL Reference Measurement	As specified in section		
		Channel R.0 TDD	A.3.1.1.2		
PCFICH/PDCCH/PHICH parameters for		DL Reference Measurement	As specified in section		
Cells 2, 3		Channel R.6 TDD	A.3.1.2.2		
Note 4. Con Table A 0.20.2.4.4 for other report test recomplete					

Note 1: See Table A.8.20.2.1-1 for other general test parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.20.2B.1-2: Cell specific test parameters for E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation conditions in synchronous cells for 20 MHz +10 MHz bandwidth

Parameter	Unit	Cell 1		Cell 2		Cell 3	
		T1	T2	T1	T2	T1	T2
BW _{channel}	MHz	20 10		10	10		
OCNG Pattern							
defined in A.3.2.2		OP.7 TDD OP.2 TDD OP.1 TDD					
Note 1: See Table A.8.20.2.1-1 for other general test parameters.							

A.8.20.2B.2 Test Requirements

The test requirements defined in section A.8.20.2.2 shall apply to this test case.

A.8.20.3 E-UTRAN FDD - UTRAN FDD event triggered reporting under fading propagation conditions

It is not necessary for CA UEs to be tested in A.8.5.1 if this case is done.

A.8.20.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the E-UTRAN FDD- UTRAN FDD cell search requirements in clause 8.1.2.4.1.

The test parameters are given in Tables A.8.20.3.1-1, A.8.20.3.1-2 and A.8.20.3.1-3 below. In the measurement control information it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.20.3.1-1: General test parameters for E-UTRAN FDD-UTRAN FDD event triggered reporting in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN		DL Reference Measurement	As specified in clause A.3.1.1.1.
FDD)		Channel R.0 FDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.1.
parameters		Channel R.6 FDD	
(E-UTRAN FDD)			
Gap Pattern Id		1	As specified in TS 36.133 clause 8.1.2.1.
Active cell		Cell 1	Cell 1 is on E-UTRA RF channel number 1.
Neighbour cell		Cell 2	Cell 2 is on UTRA RF channel number 1.
Configured active Scell		Cell 3	Cell 3 is on E-UTRA RF channel number 2.
CP length		Normal	Applicable to cell 1
E-UTRA RF Channel Number		1	One E-UTRA FDD carrier frequency is used.
E-UTRA RF Channel Number for		2	One E-UTRA FDD carrier frequency is
Scell			used.
E-UTRA Channel Bandwidth	MHz	10	
(BW _{channel})			
UTRA RF Channel Number		1	One UTRA FDD carrier frequency is used.
Inter-RAT (UTRA FDD)		CPICH Ec/lo	
measurement quantity			
b1-Threshold-UTRA	dB	-18	CPICH Ec/lo threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used.
DRX		OFF	
Monitored UTRA FDD cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell list.
T1	S	5	
T2	S	6	

Table A.8.20.3.1-2: Cell specific test parameters for E-UTRAN FDD (cell # 1, cell # 3) for event triggered reporting of UTRAN FDD cell under fading propagation conditions

Parameter	Unit	Cell 1		Ce	Cell 3		
		T1	T2	T1	T2		
E-UTRA RF Channel		1		2	2		
Number							
BW _{channel}	MHz	10)	1	0		
Correlation Matrix		1x2 L	_OW	1x2	Low		
and Antenna							
Configuration							
OCNG Pattern							
defined in A.3.2.1.1		OP.1	FDD	OP.1	FDD		
(OP.1 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB	0		(0		
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	4	4	1		
\hat{E}_s/N_{oc}	dB	4	4	4	1		
N_{oc}	dBm/15			-98			
	kHz						
RSRP	dBm/15 kHz	-94	-94	-9)4		
SCH_RP	dBm/15	-94	-94	-9)4		
	kHz						
Propagation			E	TU70			
Condition							

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Table A.8.20.3.1-3: Cell specific test parameters for UTRAN FDD (cell # 2) for event triggered reporting of UTRAN FDD cell under fading propagation conditions

Parameter	Unit	Cell 2			
		T1	T2		
UTRA RF Channel Number		1			
CPICH_Ec/lor	dB	-10			
PCCPCH_Ec/lor	dB	-12			
SCH_Ec/lor	dB	-12			
PICH_Ec/lor	dB	-15			
DPCH_Ec/lor	dB	N/A			
OCNS		-0.941			
\hat{I}_{or}/I_{oc}	dB	-Infinity	-1.8		
I_{oc}	dBm/3.84 MHz	-70			
CPICH_Ec/Io	dB	-Infinity -14			
Propagation Condition		Case 5 (Note 3)			

Note 1: The DPCH level is controlled by the power control loop.

Note 2: The power of the OCNS channel that is added shall make the total power from the cell to be equal to I_{or}

Note3: Case 5 propagation conditions are defined in Annex A of 3GPP TS 25.101.

A.8.20.3.2 Test Requirements

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 4800 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.20.4 E-UTRAN TDD to UTRAN TDD cell search under fading propagation conditions

It is not necessary for CA UEs to be tested in A.8.7.1 if this case is done.

A.8.20.4.1 Test Purpose and Environment

A.8.20.4.1.1 1.28 Mcps TDD option

The purpose of this test is to verify that the UE makes correct reporting of an event. This test will partly verify the E-UTRA TDD to UTRA TDD cell search requirements in clause 8.1.2.4.3 under fading propagation conditions.

This test scenario comprised of 1 E-UTRA TDD PCell, 1 E-UTRA TDD SCell and 1 UTRA TDD cell to be searched. Test parameters are given in Table A.8.20.4.1.2-1, A.8.20.4.1.2-2, and A.8.20.4.1.2-3. Gap pattern configuration #0 as defined in table 8.1.2.1-1 is provided.

In the measurement control information, it is indicated to the UE that event-triggered reporting with Event B1 is used. The test consists of two successive time periods, with time duration of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.20.4.1.1-1: General test parameters for E-UTRA TDD to UTRA(1.28 Mcps TDD OPTION) cell search in fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
E-UTRA RF Channel Number		1	One E-UTRA TDD carrier frequency is used.
E-UTRA RF Channel Number for Scell		2	One E-UTRA TDD carrier frequency is used.
Active cell		Cell 1	E-UTRA TDD cell
Neighbour cell		Cell 2	UTRA 1.28Mcps TDD Cell
Configured active SCell		Cell 3	E-UTRA TDD cell
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Uplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
CP length of cell 1		normal	
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Time offset between cells		3 ms	Asynchronous cells
Ofn	dB	0	
Thresh	dBm	-87	
T1	S	5	
T2	s	10	

Table A.8.20.4.1.1-2: Cell specific test parameters for cell search E-UTRA TDD to UTRA TDD test case (cell 1, cell3)

Parameter	Unit	Cell 1		C	Cell 3		
		T1	T2	T1	T2		
E-UTRA RF Channel Number		1			2		
BW _{channel}	MHz	1	0		10		
Correlation Matrix and Antenna		1x2	Low	1x2	2 Low		
Configuration							
OCNG Pattern defined in A.3.2.2.1 (OP.1		OP 1	TDD	OP	1 TDD		
TDD)		01.1	100	01.	1 100		
PBCH_RA	dB]					
PBCH_RB	dB]					
PSS_RA	dB	ļ					
SSS_RA	dB	ļ					
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_RB	dB	0	0	0	0		
PDCCH_RA	dB						
PDCCH_RB	dB	ļ					
PDSCH_RA	dB						
PDSCH_RB	dB	ļ					
OCNG_RA ^{Note1}	dB						
OCNG_RB ^{Note1}	dB						
$\hat{ extbf{E}}_{ ext{s}}/ extbf{I}_{ ext{ot}}$	dB	9	9	9	9		
\hat{E}_s/N_{oc}	dB	9	9	9	9		
N_{oc}	dBm/15kHz	-98		•			
RSRP	dBm/15kHz	-89	-89	-89	-89		
SCH_RP	dBm/15kHz	-89	-89	-89	-89		
Propagation Condition		ETU70					

The resources for uplink transmission are assigned to the UE prior to the start of time period T2. Note 2:

Table A.8.20.4.1.1-3: Cell specific test parameters for cell search E-UTRA TDD to UTRA TDD test case (cell 2)

Parameter	Unit	Cell 2 (UTRA)			
Timeslot Number		()	Dwl	PTS
		T1	T2	T1	T2
UTRA RF Channel Number NOTE1		Channel 2			
PCCPCH_Ec/lor	dB	-3	-3		
DwPCH_Ec/lor	dB			0	0
OCNS_Ec/lor ^{NO1E2}	dB	-3	-3		
\hat{I}_{or}/I_{oc}	dB	-inf	5	-inf	5
I_{oc}	dBm/1.2 8 MHz	-80			
PCCPCH RSCP	dBm	-inf	-78	n.a.	n.a.
Propagation Condition		Case 3 ^{NOTE3}			

In the case of multi-frequency cell, the UTRA RF Channel Note 1:

Number is the primary frequency's channel number. The power of the OCNS channel that is added shall make Note 2: the total power from the cell to be equal to $\ensuremath{\text{I}_{or}}\xspace$

Case 3 propagation conditions are defined in Annex B of Note 3: TS 25.102

A.8.20.4.2 Test Requirements

A.8.20.4.2.1 1.28 Mcps TDD option

The UE shall send one Event B1 triggered measurement report, with a measurement reporting delay less than 6400 ms from the beginning of time period T2.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

NOTE: The actual overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.20.4A E-UTRAN TDD with 20 MHz +20 MHz bandwidth to UTRAN TDD cell search under fading propagation conditions

A.8.20.4A.1 Test Purpose and Environment

A.8.20.4A.1.1 1.28 Mcps TDD option

The purpose of this test case is the same as for the test defined in subclause A.8.20.4. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8. 20.4A.1.1-1 and A.8. 20.4A.1.1-2 will replace the values of corresponding parameters in Tables A.8. 20.4.1.1-1 and A.8. 20.4.1.1-2.

Table A.8.20.4A.1.1-1: General test parameters for E-UTRA TDD with 20MHz +20MHz bandwidth to UTRA(1.28 Mcps TDD OPTION) cell search in fading propagation conditions

Parameter Unit		Value	Comment		
PDSCH parameters		DL Reference Measurement	As specified in section		
		Channel R.3 TDD	A.3.1.1.2		
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in section		
parameters		Channel R.10 TDD	A.3.1.2.2		
Note 1: See Table A.8.20.4.1.1-1 for other general test parameters.					
Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed					
according to the principle defined in section A 3.6.1					

Table A.8.20.4A.1.1-2: Cell specific test parameters for cell search E-UTRA TDD with 20MHz +20MHz bandwidth to UTRA TDD test case (cell 1, cell3)

Unit	Cell 1		Cell 3	
	T1	T2	T1	T2
MHz	20 20		:0	
	OP.7 TDD OP.7 TDD			TDD
	ETU70			
ote 1: See Table A.8.20.4.1.1-2 for other general test parameters.				
Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.				
	MHz r general test parament which is inde	MHz 2 OP.7 r general test parameters. ment which is independent of o	MHz 20 OP.7 TDD r general test parameters. ment which is independent of channel band	T1 T2 T1 MHz 20 2 OP.7 TDD OP.7 ETU70 r general test parameters. ment which is independent of channel bandwidth and in

A.8.20.4A.2 Test Requirements

A.8.20.4A.2.1 1.28 Mcps TDD option

The test requirements defined in section A.8.20.4.2.1 shall apply to this test case.

A.8.20.4B E-UTRAN TDD with 20 MHz +10 MHz bandwidth to UTRAN TDD cell search under fading propagation conditions

A.8.20.4B.1 Test Purpose and Environment

A.8.20.4B.1.1 1.28 Mcps TDD option

The purpose of this test case is the same as for the test defined in subclause A.8.20.4. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.8. 20.4B.1.1-1 and A.8. 20.4B.1.1-2 will replace the values of corresponding parameters in Tables A.8. 20.4.1.1-1 and A.8. 20.4.1.1-2.

Table A.8.20.4B.1.1-1: General test parameters for E-UTRA TDD with 20MHz +10MHz bandwidth to UTRA(1.28 Mcps TDD OPTION) cell search in fading propagation conditions

Parameter	Unit	Value	Comment
Channel bandwidth for Cell 1 (BW _{channel})	MHz	20	
PDSCH parameters for Cell 1		DL Reference Measurement Channel R.3 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters for Cell 1		DL Reference Measurement Channel R.10 TDD	As specified in section A.3.1.2.2
Channel bandwidth for Cell 3 (BW _{channel})	MHz	10	
PDSCH parameters for Cell 3		DL Reference Measurement Channel R.0 TDD	As specified in section A.3.1.1.2
PCFICH/PDCCH/PHICH parameters for Cell 3		DL Reference Measurement Channel R.6 TDD	As specified in section A.3.1.2.2

Note 1: See Table A.8.20.4.1.1-1 for other general test parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.20.4B.1.1-2: Cell specific test parameters for cell search E-UTRA TDD with 20MHz +10MHz bandwidth to UTRA TDD test case (cell 1, cell3)

Parameter	Unit	Cell 1		Cell 3	
		T1	T2	T1	T2
E-UTRA RF Channel Number			1		2
BW _{channel}	MHz	2	20	1	10
OCNG Pattern defined in A.3.2.2		OP.7	7 TDD	OP.1	I TDD

Note 1: See Table A.8.20.4.1.1-2 for other general test parameters.

Note 2: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

A.8.20.4B.2 Test Requirements

A.8.20.4B.2.1 1.28 Mcps TDD option

The test requirements defined in section A.8.20.4.2.1 shall apply to this test case.

A.8.21 CSG Proximity Indication Testing Case for E-UTRAN FDD – FDD Inter frequency

Note: The test case in this section forms the basis for a signalling test for CSG proximity detection.

A.8.21.1 Test Purpose and Environment

The purpose of this test is to verify the UE has implemented properly the feature for indicating that the UE is entering or leaving the proximity of one or more CSG member cells based on proximity detection with an autonomous search function, as defined by the requirements in Section 6.4.

The test case consists of three successive segments: Test Preparation, Negative Test, and Positive Test. The test scenario comprises of three E-UTRAN FDD cells on different carriers. Cell 1 represents the serving cell in the proximity of the CSG cell, Cell 2 the CSG cell, and Cell 3 the serving cell not in the proximity of the CSG cell. The description of the test procedure is shown in Table A.8.21-1. The general test parameters and cell specific test parameters are presented in Table A.8.21-2 and Table A.8.21-3 respectively.

Table A.8.21-1: Description of the test procedures

Parameter	Cell Status	Comment
	•	Test Preparation
Initial Condition	Cell 1 is active	Clean up the UE memory to be free from previously stored cell information for proximity detection. Turn on the UE and allow sufficient time for the UE to select to Cell 1.
Time duration T1	Cell 1 and Cell 2 are active	Turn on Cell 2 at the start of T1. Perform manual CSG selection towards Cell 2. The UE is expected to store necessary information for later proximity detection.
End condition		Turn off the UE. Turn off Cell 1 and Cell 2.
		Negative Test
Initial Condition	Cell 3 is active	Turn on Cell 3. Turn on the UE and set up the UE in connected mode with Cell 3
Time duration T2	Cell 3 is active	Configure the UE with proximity indication control by sending the Reconfiguration message with ReportProximityConfig at the start of T2. The UE is not expected to report "entering" proximity in the negative test.
End condition		Turn off the UE. Turn off Cell 3.
	•	Positive Test
Initial Condition	Cell 1 is active	Turn on Cell 1. Turn on the UE and set up the UE in connected mode with Cell 1.
Time duration T3	Cell 1 and Cell 2 are active	Turn on Cell 2 at the start of T3. Configure the UE with proximity indication control by sending the Reconfiguration message with reportProximityConfig at the start of T3. The UE is expected to report "entering" proximity before end of T3.
End condition		Turn off the UE. Turn off Cell 1 and Cell 2.

Table A.8.21-2: General test parameters for E-UTRAN FDD-FDD inter frequency cell proximity detection test case

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PDSCH allocation	n_{PRB}	2—3	13—36
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
A3-Offset	dB	-4	
Hysteresis	dB	0	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		off	As specified in section A.3.3
PRACH configuration		4	As specified in table 5.7.1-2 in 3GPP TS 36.211
Access Barring Information	-	Not sent	No additional delays in random access procedure
Time offset between cells		3 ms	Asynchronous cells
Gap pattern configuration Id		0	As specified in Table 8.1.2.1-1 started before T1 starts
Time duration T1	S	[10]	Defined to give enough time for the UE to complete the manual reselection to Cell 2.
Time duration T2	S	[360]	Defined to be longer enough to see whether the UE will report enter "proximity" indication.
Time duration T3 Note 1	S	[<=360]	The time duration for a UE to report enters "proximity" when the UE is near a CSG cell.

Note 1: The maximum allowed time duration for the UE to decide either entering or leaving "proximity" is 360s.

To reduce test time, T3 may end once UE reports entering "proximity".

Note 2: The test case assumes an environment where CSG proximity detection results not being impact by non-

Note 2: The test case assumes an environment where CSG proximity detection results not being impact by non-3GPP signals, such as GPS and WiFi. When the test case is being executed, the UE may ignore any radio signals which are not provided by the test setup which it would otherwise use in proximity estimation.

Table A.8.21-3: Cell specific test parameters for E-UTRAN FDD-FDD inter frequency cell proximity detection test case

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	Т3	T1	T2	T3
E-UARFCN		Channel 1			Channel 2		
CSG indicator			False		True	N/A	True
Physical cell global		1	1	1	2	N/A	2
identity							
CSG identity			Not sent		Sent	N/A	Sent
BW _{channel}	MHz	10			10		
OCNG Patterns		OP.1 FDD	N/A	OP.2 FDD	OP.2	N/A	OP.2
defined in A.3.2.1.1					FDD		FDD
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB		0				
PHICH_RB	dB		U		0		
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB			1			
\hat{E}_s/I_{ot}	dB	0	-inf	4	7	-inf	7
N_{oc} Note 2	dBm/15 kHz	-98				-98	
\hat{E}_s/N_{oc}	dB	0	-inf	4	7	-inf	7
RSRP Note 3	dBm/15 KHz	-98	-inf	-94	-91	-inf	-91
Propagation Condition		_	AWGN			AWGN	_

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.21-4: Cell specific test parameters for E-UTRAN FDD-FDD inter frequency cell proximity detection test case (Cell 3)

Parameter	Unit	Cell 3		
		T1	T2	T3
E-UARFCN		Channel 1		
CSG indicator			False	
Physical cell global			3	
identity				
CSG identity			Not sent	
BW _{channel}	MHz		10	
OCNG Patterns			N/A	
defined in A.3.2.1.1				
(OP.1 FDD) and in				
A.3.2.1.2 (OP.2 FDD)				
PBCH_RA	dB			
PBCH_RB	dB			
PSS_RA	dB			
SSS_RA	dB			
PCFICH_RB	dB			
PHICH_RA	dB		•	
PHICH_RB	dB		0	
PDCCH_RA	dB			
PDCCH_RB	dB			
PDSCH_RA	dB			
PDSCH_RB	dB			
OCNG_RA ^{Note 1}	dB			
OCNG_RB ^{Note 1}	dB			
\hat{E}_s/I_{ot}	dB		-inf	
$N_{oc}^{ m Note 2}$	dBm/15 kHz		-98	
\hat{E}_s/N_{oc}	dB		-inf	
RSRP Note 3	dBm/15 KHz		-inf	
Propagation Condition			AWGN	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as

AWGN of appropriate power for $N_{\it oc}$ to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves

A.8.21.2 Test Requirements

The UE shall not send an "entering" proximity indication in T2 during Negative Test.

The UE shall send an "entering" proximity indication in T3 during Positive Test.

A.8.22 E-UTRAN Discovery Signal Measurements

A.8.22.1 E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells in DRX based on CRS based discovery signal

A.8.22.1.1 Test Purpose and Environment

The purpose of the test is to verify that the UE makes correct reporting of an event when discovery signal is configured in DRX. The test will partly verify the FDD-FDD intra-frequency cell search in DRX requirements in clause 8.6.2.1.1.

The test parameters are given in Tables A.8.22.1.1-1, A.8.22.1.1-2, A.8.22.1.1-3 and A.8.22.1.1-4. In the measurement control information, it is indicated to the UE performing CRS based discovery signals measurement and event-triggered reporting with Event A3 is configured. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

Table A.8.22.1.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells in DRX based on CRS based discovery signal

Parameter	Unit	Value	Comment
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	One FDD carrier frequency is used.
DMTC period	ms	160	As specified in IE MeasDS-Config in TS 36.331
dmtc-PeriodOffset	ms	10	As specified in IE MeasDS-Config in TS 36.331
Discovery signal occasion duration	ms	1	As specified in IE MeasDS-Config in TS 36.331
A3-Offset	dB	-6	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		ON	DRX related parameters are defined in Table A.8.22.1.1-3
T1	S	5	
T2	S	10	

Table A.8.22.1.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells in DRX based on CRS based discovery signal

Parameter	Unit	Cell 1		Unit Cell 1 C		Unit Cell 1 C		Unit Cell 1	Cell 2
		T1	T2	T1	T2				
E-UTRA RF Channel			1		1				
Number									
BW _{channel}	MHz	1	10		10				
Measurement	10		-37	1	3-37				
bandwidth	$n_{\it PRB}$								
PDSCH parameters:		R.0	FDD		-				
DL Reference									
Measurement Channel									
PCFICH/PDCCH/PHIC		R.6	FDD	R.	6 FDD				
H parameters:									
DL Reference									
Measurement Channel									
OCNG Patterns									
defined in A.3.2.1.1		OP.1	FDD	OP	.2 FDD				
(OP.1 FDD) and in									
A.3.2.1.2 (OP.2 FDD)									
PBCH_RA	dB								
PBCH_RB	dB								
PSS_RA	dB								
SSS_RA	dB								
PCFICH_RB	dB								
PHICH_RA	dB		0		0				
PHICH_RB	dB								
PDCCH_RA	dB								
PDCCH_RB	dB								
PDSCH_RA	dB								
PDSCH_RB	dB								
OCNG RA ^{Note 1}	dB								
OCNG_RB ^{Note 1}	dB								
$N_{oc}^{ m Note~2}$	dBm/15 KHz			-98					
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4				
\hat{E}_{s}/I_{ot}	dB	4	-1.46	-Infinity	-1.46				
RSRP Note 3	dBm/15 KHz	-94	-94	-Infinity	-94				
SCH RP Note 3	dBm/15 KHz	-94	-94	-Infinity	-94				
lo Note 3	dBm/9MHz	-64.76	-62.42		columns for Cell 1				
Propagation Condition			U30		TU30				
Correlation Matrix and			Low		2 Low				
Antenna Configuration			-		-				
Timing offset to Cell 1	μs		-	2.3	(CP/2)				
20000	μο				\-·-/				

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled

Note 3: Es/lot, RSRP and SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.22.1.1-3: DRX-Configuration for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells in DRX based on CRS based discovery signal

Field	Value	Comment
onDurationTimer	psf1	As specified in clause 6.3.2 in TS 36.331
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf256	
shortDRX	disable	

Table A.8.22.1.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells in DRX based on CRS based discovery signal

Field	Value	Comment
TimeAlignmentTimer	sf500	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.22.1.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 4864ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

A.8.22.2 E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells in DRX based on CRS based discovery signal

A.8.22.2.1 Test Purpose and Environment

The purpose of the test is to verify that the UE makes correct reporting of an event when discovery signal is configured in DRX. The test will partly verify the TDD-TDD intra-frequency cell search in DRX requirements in clause 8.6.2.1.1.

The test parameters are given in Tables A.8.22.2.1-1, A.8.22.2.1-2, A.8.22.2.1-3 and A.8.22.2.1-4. In the measurement control information, it is indicated to the UE performing CRS based discovery signals measurement and event-triggered reporting with Event A3 is configured. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

Table A.8.22.2.1-1: General test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells in DRX based on CRS based discovery signal

Parameter	Unit	Value	Comment
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	One TDD carrier frequency is used.
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211. The same configuration in both cells
DMTC period	ms	160	As specified in IE MeasDS-Config in TS 36.331
dmtc-PeriodOffset	ms	10	As specified in IE MeasDS-Config in TS 36.331
Discovery signal occasion duration	ms	2	As specified in IE MeasDS-Config in TS 36.331
A3-Offset	dB	-6	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	s	0	
Filter coefficient		0	L3 filtering is not used
DRX		ON	DRX related parameters are defined in Table A.8.22.2.1-3
T1	S	5	
T2	S	10	

Table A.8.22.2.1-2: Cell specific test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells in DRX based on CRS based discovery signal

Parameter	Unit	Cell 1 T1 T2			Cell 2		
				T1	T2		
E-UTRA RF Channel		1			1		
Number							
BW _{channel}	MHz	10		10			
Measurement	10	13	-37	1	13-37		
bandwidth	$n_{{\scriptscriptstyle PRB}}$						
PDSCH parameters:		R.0	TDD		-		
DL Reference							
Measurement Channel							
PCFICH/PDCCH/PHIC		R.6	TDD	R.	6 TDD		
H parameters:							
DL Reference							
Measurement Channel							
OCNG Patterns							
defined in A.3.2.2.1		OP.1	TDD	OP	2.2 TDD		
(OP.1 TDD) and in							
A.3.2.2.2 (OP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB			0			
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB	()				
PHICH_RB	dB						
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
N _{oc} Note 2	dBm/15 KHz			-98			
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4		
\hat{E}_{s}/I_{ot}	dB	4 -1.46		-Infinity	-1.46		
RSRP Note 3	dBm/15 KHz	-94	-94	-Infinity	-94		
SCH RP Note 3	dBm/15 KHz	-94	-94	-Infinity	-94		
lo Note 3	dBm/9MHz	-64.76	-62.42	Specified in o	columns for Cell 1		
Propagation Condition		ET	J30		TU30		
Correlation Matrix and			Low		2 Low		
Antenna Configuration							
Timing offset to Cell 1	μs		-	2.3	(CP/2)		
				·	· , ,		

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled

Note 3: Es/lot, RSRP and SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.22.2.1-3: DRX-Configuration for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells in DRX based on CRS based discovery signal

Field	Value	Comment
onDurationTimer	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf256	
shortDRX	disable	

Table A.8.22.2.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells in DRX based on CRS based discovery signal

Field	Value	Comment
TimeAlignmentTimer	sf500	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.22.2.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 4864ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

A.8.22.3 E-UTRAN FDD-FDD inter-frequency event triggered reporting under fading propagation conditions in DRX based on CRS based discovery signal

A.8.22.3.1 Test Purpose and Environment

The purpose of the test is to verify that the UE makes correct reporting of an event when discovery signal is configured in DRX. The test will partly verify the FDD-FDD inter-frequency measurement requirements in clause 8.6.2.2.1.

The test parameters for are given in Tables A.8.22.3.1-1, A.8.22.3.1-2, A.8.22.3.1-3 and A.8.22.3.1-4. In the measurement control information, it is indicated to the UE performing CRS based discovery signals measurement and event-triggered reporting with Event A3 is configured. Entire discovery signal occasion should be contained in the measurement gap. The subframe contained discovery signal for the measurement is not overlapped with the first 0.5ms period and the last 0.5ms period in every gap.

UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.22.3.1-1: General test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting under fading propagation conditions in DRX based on CRS based discovery signal

Parameter	Unit	Value	Comment
E-UTRA RF Channel		1, 2	Two FDD carrier frequencies are used.
Number			
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2	Cell 1 is on RF channel number 2
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Can Offset		9	As experified in TS 26 221 clause 6 2.5
Gap Offset		9	As specified in TS 36.331 clause 6.3.5
DMTC period	ms	160	As specified in IE MeasDS-Config in TS 36.331
dmtc-PeriodOffset	ms	10	As specified in IE MeasDS-Config in TS 36.331
Discovery signal occasion duration	ms	1	As specified in IE MeasDS-Config in TS 36.331
A3-Offset	dB	-6	
Hysteresis	dB	0	
CP length		Normal	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
PRACH configuration		4	As specified in table 5.7.1-2 in TS 36.211
Access Barring Information	-	Not Sent	No additional delays in random access
			procedure.
DRX		ON	DRX related parameters are defined in
			Table A.8.22.3.1-3
T1	S	5	
T2	S	10	

Table A.8.22.3.1-2: Cell specific test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting under fading propagation conditions in DRX based on CRS based discovery signal

Parameter	Unit	Cell 1 T1 T2			Cell 2		
				T1	T2		
E-UTRA RF Channel		1			2		
Number							
BW _{channel}	MHz	10		10			
Measurement	n	13-	-37	1	13-37		
bandwidth	$n_{{\scriptscriptstyle PRB}}$						
PDSCH parameters:		R.0	FDD		-		
DL Reference							
Measurement Channel							
PCFICH/PDCCH/PHIC		R.6	FDD	R.	6 FDD		
H parameters:							
DL Reference							
Measurement Channel							
OCNG Patterns					<u> </u>		
defined in A.3.2.1.1		OP.1	FDD	OP	2.2 FDD		
(OP.1 FDD) and in							
A.3.2.1.2 (OP.2 FDD)							
PBCH_RA	dB						
PBCH_RB	dB			0			
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB	()				
PHICH_RB	dB						
PDCCH_RA	dB						
PDCCH_RB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
N_{oc} Note 2	dBm/15 kHz			-98			
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7		
\hat{E}_{s}/I_{ot}	dB	4	4	-Infinity	7		
RSRP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91		
SCH RP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91		
lo Note 3	dBm/9MHz	-64.76	-64.76	-70.22	-62.43		
Propagation Condition			J30		TU30		
Correlation Matrix and			Low		(2 Low		
Antenna Configuration		.,,,					
Timing offset to Cell 1	μs		-		3		
11.5 5.15 5.15	μο			1	- · · · · · · · · · · · · · · · · · · ·		

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled

Note 3: Es/lot, RSRP and SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.22.3.1-3: DRX-Configuration for E-UTRAN FDD-FDD inter-frequency event triggered reporting under fading propagation conditions in DRX based on CRS based discovery signal

Field	Value	Comment
onDurationTimer	psf1	As specified in clause 6.3.2 in TS 36.331
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf256	
shortDRX	disable	

Table A.8.22.3.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN FDD-FDD inter-frequency event triggered reporting under fading propagation conditions in DRX based on CRS based discovery signal

Field	Value	Comment
TimeAlignmentTimer	sf500	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.22.3.2 Test Requirements

UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 5120 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

A.8.22.4 E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation conditions in DRX based on CRS based discovery signal

A.8.22.4.1 Test Purpose and Environment

The purpose of the test is to verify that the UE makes correct reporting of an event when discovery signal is configured in DRX. The test will partly verify the FDD-FDD inter-frequency measurement requirements in clause 8.6.2.2.1.

The test parameters are given in Tables A.8.22.4.1-1, A.8.22.4.1-2, A.8.22.4.1-3 and A.8.22.4.1-4. In the measurement control information, it is indicated to the UE performing CRS based discovery signals measurement and event-triggered reporting with Event A3 is configured. Entire discovery signal occasion should be contained in the measurement gap. The subframe contained discovery signal for the measurement is not overlapped with the first 0.5ms period and the last 0.5ms period in every gap.

UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore the uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

Table A.8.22.4.1-1: General test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation conditions in DRX based on CRS based discovery signal

Parameter	Unit	Value	Comment
E-UTRA RF Channel		1, 2	Two TDD carrier frequencies are used.
Number			
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2	Cell 2 is on RF channel number 2
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Gap Offset		9	As specified in TS 36.331 clause 6.3.5
Uplink-downlink		1	As specified in table 4.2-2 in TS 36.211.
configuration			The same configuration in both cells
Special subframe		6	As specified in table 4.2-1 in TS 36.211.
configuration			The same configuration in both cells
DMTC period	ms	160	As specified in IE MeasDS-Config in TS
			36.331
dmtc-PeriodOffset	ms	10	As specified in IE MeasDS-Config in TS
			36.331
Discovery signal occasion	ms	2	As specified in IE MeasDS-Config in TS
duration			36.331
A3-Offset	dB	-6	
Hysteresis	dB	0	
CP length		Normal	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
PRACH configuration		4	As specified in table 5.7.1-2 in TS 36.211
Access Barring Information	-	Not Sent	No additional delays in random access
			procedure.
DRX		ON	DRX related parameters are defined in
			Table A.8.22.4.1-3
T1	S	5	
T2	S	10	

Table A.8.22.4.1-2: Cell specific test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation conditions in DRX based on CRS based discovery signal

Parameter	Unit	Cell 1		Cell 2		
		T1	T1 T2		T2	
E-UTRA RF Channel		1			2	
Number						
BW _{channel}	MHz	1		10		
Measurement	n_{PRB}	13-	·37	1	3-37	
bandwidth	PRB					
PDSCH parameters:		R.0	TDD		-	
DL Reference						
Measurement Channel						
PCFICH/PDCCH/PHIC		R.6	TDD	R.	6 TDD	
H parameters:						
DL Reference						
Measurement Channel				ļ		
OCNG Patterns		05.4	TDD		0.700	
defined in A.3.2.2.1		OP.1	טטו	OP OP	.2 TDD	
(OP.1 TDD) and in						
A.3.2.2.2 (OP.2 TDD)	ID.					
PBCH_RA	dB					
PBCH_RB	dB			0		
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB	(`			
PHICH_RA	dB	(,			
PHICH_RB	dB					
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
$N_{oc}^{ m Note~2}$	dBm/15 kHz			-98		
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	7	
\hat{E}_s/I_{ot}	dB	4	4	-Infinity	7	
RSRP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91	
SCH RP Note 3	dBm/15 kHz	-94	-94	-Infinity	-91	
lo Note 3	dBm/9MHz	-64.76	-64.76	-70.22	-62.43	
Propagation Condition		ETU30			TU30	
Correlation Matrix and		1x2			2 Low	
Antenna Configuration						
Timing offset to Cell 1					ronous cells)	
Note 1: OCNC shall be		u II				

Note 3: Es/lot, RSRP and SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled

Table A.8.22.4.1-3: DRX-Configuration for E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation conditions in DRX based on CRS based discovery signal

Field	Value	Comment
onDurationTimer	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf256	
shortDRX	disable	

Table A.8.22.4.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation conditions in DRX based on CRS based discovery signal

Field	Value	Comment
TimeAlignmentTimer	sf500	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.22.4.2 Test Requirements

UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 5120 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

A.8.22.5 E-UTRAN FDD-FDD intra-frequency event triggered reporting in DRX based on CSI-RS based discovery signal

A.8.22.5.1 Test Purpose and Environment

The purpose of the test is to verify that the UE makes correct reporting of an event in DRX. The test will partly verify the FDD-FDD intra-frequency cell search in DRX requirements in clause 8.6.3.1.1.2.

The test parameters are given in Tables A.8.22.5.1-1, A.8.22.5.1-2, A.8.22.5.1-3 and A.8.22.5.1-4. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

The UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

Table A.8.22.5.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting for DRS measurement based on CSI-RS with DRX

Parameter	Unit	Value	Comment
		Test 1	
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	One FDD carrier frequency is used.
DMTC period [2]	ms	160	
DMTC period offset [2]	ms	10	
Discovery signal occasion duration	ms	1	
A3-Offset	dB	-6	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		ON	DRX related parameters are defined in Table A.8.22.5.1-3
Time offset between cells		2.3 μs	CP/2 or Synchronous cells
T1	S	5	
T2	S	30	

Table A.8.22.5.1-2: Cell specific test parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting for DRS measurement based on CSI-RS with DRX

Parameter	Unit	Cell 1		Cell 2		
		T1	T2	T1	T2	
E-UTRA RF Channel		1			1	
Number						
BW _{channel}	MHz		0		10	
Measurement	n _{PRB}	13-37			13-37	
bandwidth						
PDSCH parameters		DL Reference	Measurement	DL Referen	ce Measurement	
		Channel R.0 FDD as in		Channel	R.0 FDD as in	
		A.3.			3.1.1.1	
PCFICH/PDCCH/PHIC			Measurement		ce Measurement	
H parameters			6 FDD as in		R.6 FDD as in	
		A.3.			3.1.2.1	
Correlation Matrix and		1x2	Low	1:	k2 Low	
Antenna Configuration						
OCNG Patterns						
defined in A.3.2.1.1		OP.1	FDD	OF	P.2 FDD	
(OP.1 FDD) and in						
A.3.2.1.2 (OP.2 FDD)						
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB			0		
SSS_RA	dB					
PCFICH_RB	dB		,			
PHICH_RA	dB	()			
PHICH_PB	dB					
PDCCH_RA	dB					
PDCCH_PB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
p-C-r10 [2]	dB	6 6		6	6	
N_{oc} Note 3	dBm/15 KHz	-9		.98		
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4	
CRS $\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4	-1.46	-Infinity	-1.46	
CSI-RS $\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	dB	10	4.54	-Infinity	4.54	
RSRP Note 4	dD /4 = 1/11	0.4	0.4	In Contractor	0.4	
Note 4	dBm/15 KHz	-94	-94	-Infinity	-94	
CSI-RSRP Note 4 SCH_RP Note 4	dBm/15 KHz	-88	-88	-Infinity	-88	
	dBm/15 KHz	-94	-94	-Infinity	-94	
001 = form = size = 1	dBm/9 MHz	-60 -60 2		Specied in (columns for cell1	
CSI reference signal		-	2		4	
configurations [16]						
CSI-RS subframe		0			0	
offset	40				0	
CSI-RS individual	dB	0			0	
offset [2]	1			-	-nahla	
CSI-RS muting		Enable ETU30			Enable	
Propagation Condition	120	<u> </u>	USU		ETU30	
Timing offset to cell 1 Note 1: OCNG shall be	US Lead such that	t both colla ara f	ully allocated as		3 (CP/2)	

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.22.5.1-3: DRX-Configuration for E-UTRAN FDD-FDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Value	Comment
onDurationTimer	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	Sf256	
shortDRX	disable	

Table A.8.22.5.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN FDD-FDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Value	Comment
TimeAlignmentTimer	sf500	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.22.5.2 Test Requirements

In Test 1, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 5632ms ($T_{identify_intra_SCE_DRX} + T_{Measurement_Period_intra_FDD_CSI-RS_DRX} = 16* max { <math>T_{DMTC_periodicity}$, DRX cycle length} + $3*Max\{T_{DMTC_periodicity}$, DRX cycle length} + $3*Max\{T_{DMTC_periodicity}$, DRX cycle length} = $22*Max\{T_{DMTC_periodicity}$, DRX cycle length}) from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE send the measurement report on PUSCH.

In Test 2, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 28160ms ($22*Max\{T_{DMTC_periodicity}, DRX$ cycle length}) from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH for scheduling request (SR) to obtain allocation to send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

A.8.22.6 E-UTRAN TDD-TDD intra-frequency event triggered reporting in DRX based on CSI-RS based discovery signal

A.8.22.6.1 Test Purpose and Environment

The purpose of the test is to verify that the UE makes correct reporting of an event in DRX. The test will partly verify the TDD-TDD intra-frequency cell search in DRX requirements in clause 8.6.3.1.2.2.

The test parameters are given in Tables A.8.22.6.1-1, A.8.22.6.1-2, A.8.22.6.1-3 and A.8.22.6.1-4. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

Table A.8.22.6.1-1: General test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting for DRS measurement based on CSI-RS with DRX

Parameter	Unit	Value	Comment
		Test 1	
PDSCH parameters		DL Reference Measurement	As specified in clause A.3.1.1.2
		Channel R.0 TDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.2
parameters		Channel R.6 TDD	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel Number		1	One TDD carrier frequency is used.
DMTC period [2]	ms	160	
DMTC period offset [2]	ms	10	
Discovery signal occasion	ms	2	
duratuion			
A3-Offset	dB	-6	
CP length		Normal	
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211.
			The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211.
			The same configuration in both cells
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		ON	DRX related parameters are defined in
			Table A.8.22.6.1-3
T1	S	5	
T2	S	30	

Table A.8.22.6.1-2: Cell specific test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting for DRS measurement based on CSI-RS with DRX

Parameter	Unit	Ce	II 1		Cell 2	
		T1	T2	T1	T2	
E-UTRA RF Channel		,	1		1	
Number	NAL I—	40			40	
BW _{channel}	MHz	10 13-37		10		
Measurement	n _{PRB}	13	-37	13-37		
bandwidth		DI Deference	Magauramant	DI Deferen	aa Maaauramant	
DDCCII maramatara			Measurement		ce Measurement	
PDSCH parameters			0 TDD as in		R.0 TDD as in	
			1.1.2 Measurement		3.1.1.2 ce Measurement	
DCEICH/DDCCH/DHIC						
PCFICH/PDCCH/PHIC			6 TDD as in		R.6 TDD as in	
H parameters			1.2.2		3.1.2.2	
Correlation Matrix and		1X2	Low	1)	k2 Low	
Antenna Configuration						
OCNG Patterns		00.4	TDD	0.5	O TOD	
defined in A.3.2.1.1		OP.1	TDD	OF	P.2 TDD	
(OP.1 TDD) and in						
A.3.2.1.2 (OP.2 TDD)	ID.					
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB			0		
SSS_RA	dB					
PCFICH_RB	dB		2			
PHICH_RA	dB	(0			
PHICH_PB	dB					
PDCCH_RA	dB					
PDCCH_PB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 1}	dB					
OCNG_RB ^{Note 1}	dB					
p-C-r10 [2]	dB	6	6	6	6	
N_{oc} Note 3	dBm/15 KHz	-9		-98		
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4	
1	4D	4	4.40	In the ite.	4.40	
CRS $\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	4	-1.46	-Infinity	-1.46	
CSI-RS $\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	10	4.54	-Infinity	4.54	
RSRP Note 4	dBm/15 KHz	-94	-94	-Infinity	-94	
CSI-RSRP Note 4	dBm/15 KHz	-88	-88	-Infinity	-88	
lo	dBm/9 MHz	-60	-57		columns for cell1	
SCH_RP Note 4	dBm/15 KHz	-94 -94		-Infinity	-94	
Propagation Condition	. <u> </u>			TU30		
CSI reference signal			2		4	
configurations [16]		_			•	
CSI-RS subframe		0			0	
offset		J			•	
CSI-RS individual	dB	0			0	
offset [2]		J			-	
CSI-RS muting		Enable		F	nable	
Timing offset to cell 1	us		0		3 (CP/2)	
		that both calls are fully allocated and a constant total transmitted				

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.22.6.1-3: DRX-Configuration for E-UTRAN TDD-TDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Value	Comment
onDurationTimer	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	Sf256	
shortDRX	disable	

Table A.8.22.6.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN TDD-TDD intra-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Value	Comment
TimeAlignmentTimer	As specified in clause 6.3.2 in	
TimeAlignmentTimer	sf500	36.331
		For further information see
sr-ConfigIndex	0	clause 6.3.2 in TS 36.331 and
_		section10.1 in TS 36.213.

A.8.22.6.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 5632 ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

A.8.22.7 E-UTRAN FDD-FDD Inter-frequency event triggered reporting in DRX based on CSI-RS based discovery signal

A.8.22.7.1 Test Purpose and Environment

The purpose of the test is to verify that the UE makes correct reporting of an event in DRX. The test will partly verify the FDD-FDD inter-frequency cell search in DRX requirements in clause 8.6.3.2.1.2.

The test parameters are given in Tables A.8.22.7.1-1, A.8.22.7.1-2, A.8.22.7.1-3 and A.8.22.7.1-4. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

The UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

Table A.8.22.7.1-1: General test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting for DRS measurement based on CSI-RS with DRX

Parameter	Unit	Value	Comment
		Test 1	
Active cell		Cell 1	
Neighbour cell		Cell 2	Cell to be identified.
E-UTRA RF Channel		1,2	Two FDD carrier frequency is used.
Number			
DMTC period [2]	ms	160	
DMTC period offset [2]	ms	10	
Discovery signal occasion	ms	1	
duration			
A3-Offset	dB	-6	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	S	0	
Filter coefficient		0	L3 filtering is not used
DRX		ON	DRX related parameters are defined in
			Table A.8.22.7.1-3
T1	S	5	
T2	S	30	

Table A.8.22.7.1-2: Cell specific test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting for DRS measurement based on CSI-RS with DRX

Parameter	Unit	Ce	II 1	Cell 2	
		T1	T2	T1	T2
E-UTRA RF Channel Number		,	1		2
BW _{channel}	MHz	10			10
Measurement		13-37		13-37	
bandwidth	n _{PRB}	13	-51	10.01	
PDSCH parameters		DI Peference	Measurement	DI Peferen	ce Measurement
1 Door parameters			0 FDD as in		R.0 FDD as in
			1.1.1		.3.1.1.1
PCFICH/PDCCH/PHIC			Measurement		ce Measurement
H parameters			6 FDD as in		R.6 FDD as in
. i parametere			1.2.1		3.1.2.1
Correlation Matrix and			Low		x2 Low
Antenna Configuration		17.2	2011		AL 2011
OCNG Patterns					
defined in A.3.2.1.1		OP.1	FDD	OF	P.2 FDD
(OP.1 FDD) and in					
À.3.2.1.2 (ÓP.2 FDD)					
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB			0	
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB	()		
PHICH_PB	dB				
PDCCH_RA	dB				
PDCCH_PB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
p-C-r10 [2]	dB	6	6	6	6
$N_{oc}^{ m Note~3}$	dBm/15 KHz	-9		·98	
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4
CRS $\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	4	-1.46	-Infinity	-1.46
CSI-RS $\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	dB	10	4.54	-Infinity	4.54
RSRP Note 4	dD:== /4.5.121.1	0.4	0.4	landin-ite :	0.4
	dBm/15 KHz	-94	-94	-Infinity	-94
CSI-RSRP Note 4 SCH_RP Note 4	dBm/15 KHz	-88	-88	-Infinity	-88
	dBm/15 KHz	-94 60	-94 60	-Infinity	-94
Dropogation Condition	dBm/9 MHz	-60 -60			ified for cell 1
Propagation Condition				U30	1
CSI reference signal		2			4
configurations [16]					
CSI-RS subframe offset		0			0
CSI-RS individual	dB	0		1	0
offset [2]	uD	0			U
CSI-RS muting		Enable			Enable
Timing offset to cell 1	us		- -		3us
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted					

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.22.7.1-3: DRX-Configuration for E-UTRAN FDD-FDD inter-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Value	Comment
onDurationTimer	psf1	
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	Sf256	
shortDRX	disable	

Table A.8.22.7.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN FDD-FDD inter-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Value	Comment
TimeAlignmentTimer	For further information see	
TimeAlignmentTimer	sf500	clause 6.3.2 in TS 36.331.
		For further information see
sr-ConfigIndex	0	clause 6.3.2 in TS 36.331 and
_		section10.1 in TS 36.213

A.8.22.7.2 Test Requirements

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 5632ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2, to the moment when the UE send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report

A.8.22.8 E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation condition in DRX based on CSI-RS based discovery signal

A.8.22.8.1 Test Purpose and Environment

The purpose of the test is to verify that the UE makes correct reporting of an event in DRX. The test will partly verify the TDD-TDD inter-frequency cell search in DRX requirements in clause 8.6.3.2.2.2.

The test parameters are given in Tables A.8.22.8.1-1, A.8.22.8.1-2, A.8.22.8.1-3 and A.8.22.8.1-4. In the measurement control information, it is indicated to the UE that event-triggered reporting with Event A3 is used. The test consists of two successive time periods, with time duration of T1, and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2.

The UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

Table A.8.22.8.1-1: General test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting for DRS measurement based on CSI-RS with DRX

Parameter	Unit	Test 1	Comment
		Value	
E-UTRA RF Channel		1, 2	Two TDD carrier frequencies are used.
Number			
Channel Bandwidth	MHz	10	
(BW _{channel})			
Active cell		Cell 1	Cell 1 is on RF channel number 1
Neighbour cell		Cell 2	Cell 2 is on RF channel number 2
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Uplink-downlink		1	As specified in TS 36.211 clause 4.2 Table
configuration			4.2-2
Special subframe		6	As specified in table 4.2-1 in TS 36.211.
configuration			The same configuration in both cells
DMTC period [2]	ms	160	
DMTC period offset [2]	ms	10	
Discovery signal occasion	ms	2	
duration			
A3-Offset	dB	-6	
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	S	0	
Filter coefficient		0	L3 filtering is not used
PRACH configuration		4	As specified in table 5.7.1-3 in TS 36.211
Access Barring Information	-	Not Sent	No additional delays in random access
_			procedure.
DRX		ON	DRX related parameters are defined in
			Table A.8.22.8.1-3
T1	S	5	
T2	S	30	

Table A.8.22.8.1-2: Cell specific test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting for DRS measurement based on CSI-RS with DRX

Parameter	Unit	Се	II 1	Cell 2			
		T1	T2	T1	T2		
E-UTRA RF Channel		,			2		
Number							
BW _{channel}	MHz	1	0	10			
Measurement	n _{PRB}	13-	-37	13-37			
bandwidth							
PDSCH parameters		DL Reference	Measurement	DL Referen	ce Measurement		
·			0 TDD as in		R.0 TDD as in		
		A.3.			3.1.1.2		
PCFICH/PDCCH/PHIC		DL Reference	Measurement	DL Referen	ce Measurement		
H parameters		Channel R.	6 TDD as in	Channel	R.6 TDD as in		
		A.3.1	.2.2.	Α.	3.1.2.2.		
Correlation Matrix and			Low		k2 Low		
Antenna Configuration							
OCNG Patterns							
defined in A.3.2.1.1		OP.1	TDD	OF	P.2 TDD		
(OP.1 TDD) and in							
À.3.2.1.2 (ÓP.2 TDD)							
PBCH_RA	dB						
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB	()		0		
PHICH_PB	dB						
PDCCH_RA	dB						
PDCCH_PB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
p-C-r10 [2]	dB	6	6	6	6		
	dBm/15 KHz	Ŭ	_	98			
N _{oc} Note 3	dbiii/15 Kiiz			30			
\hat{E}_s/N_{oc}	dB	4	4	-Infinity	4		
				-			
CRS $\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	4	-1.46	-Infinity	-1.46		
orto E _s / T _{ot}							
CSI-RS $\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	10	4.54	-Infinity	4.54		
RSRP Note 4	ID (45 K)	24	0.4	1.6.7	0.4		
Note 4	dBm/15 KHz	-94	-94	-Infinity	-94		
CSI-RSRP Note 4	dBm/15 KHz	-88	-88	-Infinity	-88		
SCH_RP Note 4	dBm/15 KHz	-94	-94	-Infinity	-94		
lo	dBm/9 MHz	-60	-60		ficed for cell1		
Propagation Condition				U30			
CSI reference signal] :	2		4		
configurations [16]							
CSI-RS subframe			0		0		
offset							
CSI-RS individual	dB		0		0		
offset [2]							
CSI-RS muting		Ena	able	<u> </u>	nable		
Timing offset to cell 1	us		-		3		
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted							

Note 2: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.8.22.8.1-3: DRX-Configuration for E-UTRAN TDD-TDD inter-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Value	Comment
onDurationTimer	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	36.331
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	Sf256	
shortDRX	disable	

Table A.8.22.8.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN TDD-TDD inter-frequency event triggered reporting in DRX under fading propagation conditions in synchronous cells

Field	Value	Comment
TimeAlignmentTimer	sf500	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.22.8.2 Test Requirements

In Test 1, the UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 5632ms from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE send the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

- NOTE 1: The actual overall delays measured in the test may be up to one DRX cycle higher than the measurement reporting delays above because UE is allowed to delay the initiation of the measurement reporting procedure to the next until the Active Time.
- NOTE 2: In order to calculate the rate of correct events the system simulator shall verify that it has received correct Event A3 measurement report.

A.8.22.9 E-UTRAN FDD event triggered reporting under deactivated SCell in non-DRX based on CRS based discovery signal

A.8.22.9.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects events A2 (Serving cell becomes worse than threshold) and A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] when CRS based discovery signal is configured within the requirements stated in clause 8.7.2.4.1.

The test parameters are given in Tables A.8.22.9.1-1 and A.8.22.9.1-2 below. It is indicated to the UE in the measurement control information that event-triggered reporting with Events A2 (PCell and SCell) and A6 is used. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. During T1 the UE shall not have any information on cell 3. Immediately at beginning of T2 the transmission power of cell 3 is increased to same level as for cell 2, and due to usage of an offset this shall result in reporting of Event A6. At beginning of T3 the transmission powers of cells 1, 2 and 3 are reduced below a threshold value and this shall result in reporting of Event A2 for PCell and SCell, respectively.

Table A.8.22.9.1-1: General test parameters for E-UTRAN FDD event triggered reporting under deactivated SCell in non-DRX based on CRS based discovery signal

	Parameter	Unit	Value	Comment
E-U1	RA RF Channel		1, 2	Two radio channels are used for this test
Num	ber		1, 2	
Activ	Active PCell		Cell 1	Primary cell on RF channel number 1.
Conf	igured deactivated		Cell 2	Configured deactivated secondary cell on
SCe			Cell 2	RF channel number 2.
Neig	hbour cell		Cell 3	Neighbor cell to be identified on RF
				channel number 2.
	ength		Normal	
DRX			OFF	Continuous monitoring of primary cell
DMT	C period	ms	160	As specified in IE MeasDS-Config in TS 36.331
dmtc	-PeriodOffset for cells 2	ms	10	As specified in IE MeasDS-Config in TS
and	3			36.331
Disc	overy signal occasion	ms	1	As specified in IE MeasDS-Config in TS
dura			·	36.331
A2	Hysteresis	dB	0	Hysteresis for evaluation of event A2.
	Threshold RSRP	dBm		Actual RSRP threshold for event A2.
			-93	Needs to take absolute accuracy tolerance
			33	in clause 9.1.14.2 into account plus
			-	margin.
	Time To Trigger	S	0	
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.
	Offset	dB		Offset parameter for evaluation of event
			-6	A6. Needs to take relative accuracy
				tolerance in clause 9.1.14.2 into account
	Daniert en la con		F-I	plus margin.
	Report on leave	_	False	
0-11	Time To Trigger Individual offset for cells	S	0	In this interest for a till an entire and
		dB	0	Individual offset for cells on primary
_	F channel number 1 individual offset for cells	dB		component carrier. Individual offset for cells on secondary
		ub	0	component carrier.
	on RF channel number 2 Filter coefficient		0	
	I measurement cycle	mc		L3 filtering is not used
	isCycleSCell)	ms	320	
T1	iooyoieooeii)	S	10	
T2		S	10	
T3		S	5	
10		3	J	

NOTE: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.22.9.1-2: Cell specific test parameters for E-UTRAN FDD event triggered reporting under deactivated SCell in non-DRX based on CRS based discovery signal

Parameter	Unit		Cell 1		Cell 2			Cell 3									
		T1	T2	T3	T1	T2	Т3	T1	T2	Т3							
E-UTRA RF Channel			1			2			2								
Number																	
BW _{channel}	MHz		10		10			10									
Measurement	n		13-37		13-37				13-37								
bandwidth	n_{PRB}				13-37				10 07								
PDSCH parameters:			R.0 FDD			-			-								
DL Reference																	
Measurement Channel								_									
PCFICH/PDCCH/PHIC			R.6 FDD			R.6 FDD		h	R.6 FDD								
H parameters:																	
DL Reference																	
Measurement Channel																	
OCNG Patterns		,	2D 4 EDD		l ,	0D 0 EDD			D 0 EDD								
defined in A.3.2.1.1		,	OP.1 FDD		'	OP.2 FDD		١	P.2 FDD								
(OP.1 FDD) and in A.3.2.1.2 (OP.2 FDD)																	
PBCH_RA	dB																
PBCH_RB	dB																
PSS_RA	dB																
SSS_RA	dB																
PCFICH_RB	dB																
PHICH_RA	dB																
PHICH_RB	dB		0		0				0								
PDCCH_RA	dB		U		0												
PDCCH_RB	dB																
PDSCH_RA	dB																
PDSCH_RB	dB																
OCNG_RA ^{Note 1}	dB																
OCNG PRNote 1	dB																
N _{oc} Note 2	dBm/15 kHz		-101				-10	l)1									
Ê _s /N _{oc}	dBIII/13 KI12	19	19	-3	19	19	-3	-infinity	19	-3							
Ê _s /I _{ot}	dB	19	19	-3	19	-0.05	-4.76	-infinity	-0.05	-4.76							
RSRP Note 3	dBm/15 kHz	-82	-82	-104	-82	-82	-104	-infinity	-82	-104							
SCH_RP Note 3	dBm/15 kHz	-82	-82	-104	-82	-82	-104	-infinity	-82	-104							
lo Note 3	dBm/9MHz	-54.16	-54.16	-10-	-54.16	-51.18	-10-		d in colur								
10	dDiff/3ivii iz	-34.10	-5-10	71.45	-3 -1 .10	-31.10	70.20	Opecine	Cell 2	11113 101							
Propagation Condition			ETU30	71.40		ETU30	70.20		ETU30								
Correlation Matrix and			1x2 Low			1x2 Low			1x2 Low								
Antenna Configuration			. AL LUW			.AZ LOW											
Timing offset to Cell 1	μs		-		0				-								
Time alignment error	μs		_		U ≤ TAE			- N/A									
relative to cell 1 Note 5	μδ		-			2 IAC											
Timing offset to Cell 2	μs		-			-		2.3 (CP/2)									
I Note 1: OCNG shall b	e used such that	t all cells a	re fully allo	cated and	d a constar	nt total tran	smitted p	ower spect	tral densi	Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is							

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

A.8.22.9.2 Test Requirements

The UE shall send one Event A6 triggered measurement report with a measurement reporting delay of less than 5.12s $(13 \times measCycleSCell + T_{measure_scc_CRS})$ from the beginning of time T2.

The UE shall send one Event A2 triggered measurement report for Cell 1 with a measurement reporting delay of less than 480 ($3 \times T_{DMTC_periodicity}$) ms from beginning of time T3.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: Es/lot, RSRP and SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

The UE shall send one Event A2 triggered measurement report for Cell 2 with a measurement reporting delay of less than 960ms (3× measCycleSCell) from beginning of time T3.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90% for each of the events.

NOTE: The actual overall delays measured in the tests may be up to $2 \times TTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.22.10 E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX based on CRS based discovery signal

A.8.22.10.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects events A2 (Serving cell becomes worse than threshold) and A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] when CRS based discovery signal is configured within the requirements stated in clause 8.7.2.4.1.

The test parameters are given in Tables A.8.22.10.1-1 and A.8.22.10.1-2 below. It is indicated to the UE in the measurement control information that event-triggered reporting with Events A2 (PCell and SCell) and A6 is used. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. During T1 the UE shall not have any information on cell 3. Immediately at beginning of T2 the transmission power of cell 3 is increased to same level as for cell 2, and due to usage of an offset this shall result in reporting of Event A6. At beginning of T3 the transmission powers of cells 1, 2 and 3 are reduced below a threshold value and this shall result in reporting of Event A2 for PCell and SCell, respectively.

Table A.8.22.10.1-1: General test parameters for E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX based on CRS based discovery signal

	Parameter	Unit	Value	Comment
E-U7	RA RF Channel		1, 2	Two radio channels are used for this test
Num	ber		•	
Activ	e PCell		Cell 1	Primary cell on RF channel number 1.
Conf	igured deactivated		Cell 2	Configured deactivated secondary cell on
SCe			Cell 2	RF channel number 2.
Neig	hbour cell		Cell 3	Neighbor cell to be identified on RF
			Cell 3	channel number 2.
	ength		Normal	
	cial subframe		6	As specified in table 4.2.1 in TS 36.211.
	guration		6	The same configuration applies to all cells.
Uplir	k-downlink		1	
	guration		·	
DRX			OFF	Continuous monitoring of primary cell
DMT	C period	ms	160	As specified in IE MeasDS-Config in TS
				36.331
	-PeriodOffset for cells 2	ms	10	As specified in IE MeasDS-Config in TS
and				36.331
	overy signal occasion	ms	2	As specified in IE MeasDS-Config in TS
dura				36.331
A2	Hysteresis	dB	0	Hysteresis for evaluation of event A2.
	Threshold RSRP	dBm		Actual RSRP threshold for event A2.
			-93	Needs to take absolute accuracy tolerance
			-93	in clause 9.1.14.2 into account plus
				margin.
	Time To Trigger	S	0	
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.
	Offset	dB		Offset parameter for evaluation of event
			-6	A6. Needs to take relative accuracy
			9	tolerance in clause 9.1.14.2 into account
				plus margin.
	Report on leave		False	
	Time To Trigger	S	0	
	individual offset for cells	dB	0	Individual offset for cells on primary
	F channel number 1			component carrier.
	individual offset for cells	dB	0	Individual offset for cells on secondary
	F channel number 2			component carrier.
	coefficient		0	L3 filtering is not used
	I measurement cycle	ms	320	
	sCycleSCell)			
T1		S	10	
T2		S	10	
T3		S	5	

NOTE: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.22.10.1-2: Cell specific test parameters for E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX based on CRS based discovery signal

Parameter	Unit		Cell 1		Cell 2			Cell 3			
		T1	T2	T3	T1	T2	T3	T1	T2	Т3	
E-UTRA RF Channel			1			2			2		
Number											
BW _{channel}	MHz		10		10			10			
Measurement	n		13-37		13-37				13-37		
bandwidth	n_{PRB}					10 01			10 07		
PDSCH parameters:			R.0 TDD			-			-		
DL Reference											
Measurement Channel								_			
PCFICH/PDCCH/PHIC			R.6 TDD			R.6 TDD		h	R.6 TDD		
H parameters:											
DL Reference											
Measurement Channel											
OCNG Patterns		,	2D 4 TDD		,				D 0 TDD		
defined in A.3.2.2.1		,	OP.1 TDD			OP.2 TDD		١	P.2 TDD		
(OP.1 TDD) and in A.3.2.2.2 (OP.2 TDD)											
PBCH_RA	dB										
PBCH_RB	dB										
PSS_RA	dB										
SSS_RA	dB										
PCFICH_RB	dB										
PHICH_RA	dB										
PHICH_RB	dB		0		0				0		
PDCCH_RA	dB		U		0						
PDCCH_RB	dB										
PDSCH_RA	dB										
PDSCH_RB	dB										
OCNG_RA ^{Note 1}	dB										
OCNG PRNote 1	dB										
N _{oc} Note 2	dBm/15 kHz		-101				-10	l)1			
Ê _s /N _{oc}	dBiii/10 Ki i2	19	19	-3	19	19	-3	-infinity	19	-3	
Ê _s /I _{ot}	dB	19	19	-3	19	-0.05	-4.76	-infinity	-0.05	-4.76	
RSRP Note 3	dBm/15 kHz	-82	-82	-104	-82	-82	-104	-infinity	-82	-104	
SCH_RP Note 3	dBm/15 kHz	-82	-82	-104	-82	-82	-104	-infinity	-82	-104	
lo Note 3	dBm/9MHz	-54.16	-54.16	-10-	-54.16	-51.18	-10-		d in colur		
10	dDiff/3ivii iz	-34.10	-54.10	71.45	-3 -1 .10	-31.10	70.20	Ореспіс	Cell 2	11113 101	
Propagation Condition			ETU30	71.40		ETU30	70.20		ETU30		
Correlation Matrix and			1x2 Low			1x2 Low			1x2 Low		
Antenna Configuration			.AL LOW			.AZ LUW					
Timing offset to Cell 1	μs		_		0				-		
Time alignment error	μs		_		U ≤ TAE			- N/A			
relative to cell 1 Note 5	μδ		-			≥ IAE					
Timing offset to Cell 2	μs		-					2.3 (CP/2)			
Note 1: OCNG shall b	e used such that	t all cells a	re fully allo	cated and	d a constar	nt total tran	smitted p	ower spect	tral densi	tv is	

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

A.8.22.10.2 Test Requirements

The UE shall send one Event A6 triggered measurement report with a measurement reporting delay of less than 5.12s $(13 \times measCycleSCell + T_{measure_scc_CRS})$ from the beginning of time T2.

The UE shall send one Event A2 triggered measurement report for Cell 1 with a measurement reporting delay of less than 480 ($3 \times T_{DMTC_periodicity}$) ms from beginning of time T3.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: Es/lot, RSRP and SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

Note 5: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

The UE shall send one Event A2 triggered measurement report for Cell 2 with a measurement reporting delay of less than 960ms (3× measCycleSCell) from beginning of time T3.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90% for each of the events.

NOTE: The actual overall delays measured in the tests may be up to $2 \times TTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.22.11 E-UTRAN FDD event triggered reporting under deactivated SCell in non-DRX based on CSI-RS based discovery signal

A.8.22.11.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects events A2 (Serving cell becomes worse than threshold) and A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] within the requirements stated in clause 8.7.3.4.1.

The test parameters are given in Tables A.8.22.11.1-1 and A.8.22.11.1-2 below. It is indicated to the UE in the measurement control information that event-triggered reporting with Events A2 (PCell and SCell) and A6 is used. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. During T1 the UE shall not have any information on cell 3. Immediately at beginning of T2 the transmission power of cell 3 is increased to same level as for cell 2, and due to usage of an offset this shall result in reporting of Event A6. At beginning of T3 the transmission powers of cells 1, 2 and 3 are reduced below a threshold value and this shall result in reporting of Event A2 for PCell and SCell, respectively.

Table A.8.22.11.1-1: General test parameters for E-UTRAN FDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions for CSI-RS based measurements under discovery signal

	Parameter	Unit	Value	Comment
E-UT	RA RF Channel		1, 2	Two radio channels are used for this test
Num			,	
	e PCell		Cell 1	Primary cell on RF channel number 1.
Conf	igured deactivated		Cell 2	Configured deactivated secondary cell on
SCel			OGII Z	RF channel number 2.
Neig	hbour cell		Cell 3	Neighbor cell to be identified on RF
			000	channel number 2.
DMT	C period	ms	160	As specified in IE MeasDS-Config in TS
	D : 10" + " II 0		40	36.331
	-PeriodOffset for cells 2	ms	10	As specified in IE MeasDS-Config in TS
and 3				36.331 As specified in IE MeasDS-Config in TS
durat	overy signal occasion	ms	1	36.331
CP le			Normal	30.331
DRX			OFF	Continuous monitoring of primary cell
A2	Hysteresis	dB	0	Hysteresis for evaluation of event A2.
7,2	Threshold RSRP	dBm	0	Actual RSRP threshold for event A2.
	THICSHOID INOIN	abiii		Needs to take absolute accuracy tolerance
			-93	in clause 9.1.11.1 into account plus
				margin.
	Time To Trigger	S	0	
A6	Hysteresis	dB	0	Hysteresis for evaluation of event A6.
	Offset	dB		Offset parameter for evaluation of event
			-h	A6. Needs to take relative accuracy
			-0	tolerance in clause 9.1.11.2 into account
				plus margin.
	Report on leave		False	
	Time To Trigger	S	0	
	individual offset for cells	dB	0	Individual offset for cells on primary
	F channel number 1	ı.	-	component carrier.
	individual offset for cells	dB	0	Individual offset for cells on secondary
	F channel number 2 coefficient		0	component carrier. L3 filtering is not used
	I measurement cycle	ms	U	L3 lillering is not used
	sCycleSCell)	1115	320	
	timing offset to cell1	110	0	
	alignment error	μS	≤ Time alignment	The value of time alignment error depends
	een cell2 and cell1	μs	error as specified	upon the type of carrier aggregation.
DOW	OON OONE WING OON I		in TS 36.104 [30]	apon the type of barrier aggregation.
			clause 6.5.3.1.	
Cell3	timing offset to cell1	μS	3	Synchronous cells
T1	<u> </u>	S	10	27 1 200 00
T2		S	10	
T3		S	5	
NOT	This to the side of the side o	- DDM	· · · · · · · · · · · · · · · · · · ·	

NOTE: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.22.11.1-2: Cell specific test parameters for E-UTRAN FDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions for CSI-RS based measurements under discovery signal

Parameter	Unit		Cell 1		Cell 2			Cell 3		
		T1	T2	Т3	T1				T2	Т3
E-UTRA RF Channel			1		2			2		
Number								2		
BW _{channel}	MHz		10		10				10	
Measurement	n _{PRB}		13-37			13-37			13-37	
bandwidth										
PDSCH parameters		DL Reference			DL Reference				Referen	
		Measurement Channel R.0				ment Char			ement Cl	
			as in A.3.1			as in A.3.1		R.0 FDD		
PCFICH/PDCCH/PHIC			_ Reference	-		_ Reference	-		Referen	
H parameters			ment Chan			ment Char			ement Cl	
		FDD	as in A.3.1	.2.1	FDD	as in A.3.1	.2.1	R.6 FDD		3.1.2.1
Correlation Matrix and			1x2 Low			1x2 Low		1	1x2 Low	
Antenna Configuration										
OCNG Patterns] .	OD 4 EDE] .	2D 0 EDE		_	ם מ בסס	
defined in A.3.2.1.1		· '	OP.1 FDD		(OP.2 FDD			P.2 FDD	'
(OP.1 FDD) and in										
A.3.2.1.2 (OP.2 FDD)	40									
PBCH_RA	dB dB									
PBCH_RB PSS_RA	dВ									
SSS_RA										
	dB									
PCFICH_RB	dB									
PHICH_RA	dB		0			0			0	
PHICH_RB PDCCH RA	dB		0		0				0	
PDCCH_RB	dB dB									
PDSCH_RA	dB dB									
PDSCH_RB OCNG_RA ^{Note 1}										
OCNG_RA OCNG_RB	dB									
Note 2	dB		404		46			<u> </u>		
N _{oc} ^{Note 2} RSRP Note 3	dBm/15 kHz	00	-101	404	-10					
CSI-RSRP Note 3	dBm/15 kHz	-82	-82	-104	-82	-82	-104	-infinity	-82	-104
SCH_RP Note 3	dBm/15 kHz	-76	-76	-98	-76	-76	-98	-infinity	-76	-98
	dBm/15 kHz dB	-82 19	-82 19	-104	-82 19	-82 19	-104 -3	-infinity	-82 19	-104 -3
Ê _s /N _{oc}	dВ			-3 -3				-infinity		
CRS Ê _s /I _{ot} CSI-RS Ê _s /I _{ot}	dB dB	19 25	19 25	3	19	-0.05 5.95	-4.76 1.24	-infinity	-0.05 5.95	-4.76 1.24
	uB	25	25	3	25	5.95 4	1.24	-infinity		1.24
CSI-RS resource			2			4			6	
configurations [2] p-C-r10 [2]	dB		6			6			6	
CSI-RS subframe	UB		0			0			0	
offset			U			U			U	
CSI-RS individual	[dB]		0			0			0	
offset [2]	[ub]		U		0				U	
CSI-RS muting			Enable		Enable				Enable	
Propagation Condition			ETU30						ETU30	
Time offset to cell 1	us		0		ETU30 0				.3 (CP/2)	\
Inter otiset to cell 1 US U US U US U 2.3 (CP/2)										

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

A.8.22.11.2 Test Requirements

The UE shall send one Event A6 triggered measurement report with a measurement reporting delay of less than 6.08s $(T_{identify_scc_SCE} + T_{measure_scc_CSI-RS} = 13*measCycleSCell + T_{measure_scc_CSI-RS} = 13*measCycleSCell + 3*measCycleSCell)$ from the beginning of time T2.

The UE shall send one Event A2 triggered measurement report for Cell 1 with a measurement reporting delay of less than 480 ms $(3*T_{DMTC_periodicity})$ from beginning of time T3.

The UE shall send one Event A2 triggered measurement report for Cell 2 with a measurement reporting delay of less than 960ms (3× measCycleSCell) from beginning of time T3.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90% for each of the events.

NOTE: The actual overall delays measured in the tests may be up to $2 \times TTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.22.12 E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX based on CSI-RS based discovery signal

A.8.22.12.1 Test Purpose and Environment

The purpose of this test is to verify that the UE correctly detects events A2 (Serving cell becomes worse than threshold) and A6 (Neighbour becomes better than SCell) defined in TS 36.331 [2] within the requirements stated in clause 8.7.3.4.1.

The test parameters are given in Tables A.8.22.12.1-1 and A.8.22.12.1-2 below. It is indicated to the UE in the measurement control information that event-triggered reporting with Events A2 (PCell and SCell) and A6 is used. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. During T1 the UE shall not have any information on cell 3. Immediately at beginning of T2 the transmission power of cell 3 is increased to same level as for cell 2, and due to usage of an offset this shall result in reporting of Event A6. At beginning of T3 the transmission powers of cells 1, 2 and 3 are reduced below a threshold value and this shall result in reporting of Event A2 for PCell and SCell, respectively.

Table A.8.22.12.1-1: General test parameters for E-UTRAN TDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions for CSI-RS based measurements under discovery signal

Unit	Value	Comment
	1, 2	Two radio channels are used for this test
	·	
	Cell 1	Primary cell on RF channel number 1.
	Cell 2	Configured deactivated secondary cell on RF channel number 2.
	Cell 3	Neighbor cell to be identified on RF channel number 2.
ms	160	As specified in IE MeasDS-Config in TS 36.331
ms	10	As specified in IE MeasDS-Config in TS 36.331
ms	1	As specified in IE MeasDS-Config in TS 36.331
MHz	40	Channel bandwidth for cells on primary
	10	and secondary component carriers
	Normal	
	6	As specified in table 4.2.1 in TS 36.211.
		The same configuration applies to all cells.
	1	
	OFF	Continuous monitoring of primary cell
dB	0	Hysteresis for evaluation of event A2.
dBm	-93	Actual RSRP threshold for event A2. Needs to take absolute accuracy tolerance in clause 9.1.11.1 into account plus margin.
S	0	
dB	0	Hysteresis for evaluation of event A6.
dB	-6	Offset parameter for evaluation of event A6. Needs to take relative accuracy tolerance in clause 9.1.11.2 into account plus margin.
	False	
S	0	
dB	0	Individual offset for cells on primary component carrier.
dB	0	Individual offset for cells on secondary component carrier.
	0	L3 filtering is not used
ms	320	_
μs	0	
μs	≤ Time alignment error as specified in TS 36.104 [30] clause 6.5.3.1.	The value of time alignment error depends upon the type of carrier aggregation.
μs	3	Synchronous cells
S	5	During this time the UE shall be aware of cells 1 and 2 but not cell 3.
S	≤12	UE should report Event A6 within 6.08s (19×scellMeasCycle)
S	5	UE should report Event A2 within 200 ms and 960s for cells 1 and 2, respectively.
	s e RRM requ	\$12

Table A.8.22.12.1-2: Cell specific test parameters for E-UTRAN TDD event triggered reporting on configured but deactivated SCell in non-DRX under fading propagation conditions for CSI-RS based measurements under discovery signal

Parameter	Unit		Cell 1		Cell 2			Cell 3			
		T1	T2	T3	T1	T2	T3	T1	T2	T3	
E-UTRA RF Channel		1			2			2			
Number											
BW _{channel}	MHz		10		10				10		
Measurement	n _{PRB}		13-37			13-37			13-37		
bandwidth											
PDSCH parameters			DL Reference			DL Reference			DL Reference		
			ement Char			ment Char		Measurement Channel			
			TDD As in A.3.1.1.2			As in A.3.1			As in A.		
PCFICH/PDCCH/PHIC			L Referenc			L Referenc			Reference		
H parameters			ement Char			ment Char			ement Cl		
		טטו	as in A.3.1	.2.2	טטו	as in A.3.1	.2.2		as in A.	3.1.2.2	
Correlation Matrix and			1x2 Low			1x2 Low			1x2 Low		
Antenna Configuration											
OCNG Patterns defined in A.3.2.1.1			OP.1 TDD			OP.2 TDD			P.2 TDD		
(OP.1 TDD) and in			טר.ו וטט		 	UP.2 1DD			יר.∠ וטט		
A.3.2.1.2 (OP.2 TDD)											
PBCH_RA	dB										
PBCH_RB	dB										
PSS_RA	dB										
SSS RA	dB	<u> </u>									
PCFICH_RB	dB										
PHICH_RA	dB										
PHICH_RB	dB		0		0			0			
PDCCH_RA	dB		Ū			Ü			J		
PDCCH_RB	dB										
PDSCH_RA	dB										
PDSCH_RB	dB										
OCNG_RA ^{Note 1}	dB										
OCNG RB ^{Note 1}	dB										
Noc Note 2	dBm/15 kHz		-101				-10)1			
RSRP Note 3	dBm/15 kHz	-82	-82	-104	-82	-82	-104	-infinity	-82	-104	
SCH RP Note 3	dBm/15 kHz	-82	-82	-104	-82	-82	-104	-infinity	-82	-104	
Ê _s /N _{oc}	dB	19	19	-3	19	19	-3	-infinity	19	-3	
CRS Ê _s /I _{ot}	dB	19	19	-3	19	-0.05	-4.76	-infinity	-0.05	-4.76	
CSI-RS Ê _s /I _{ot}	dB	25	25	3	25	5.95	1.24	-infinity	5.95	1.24	
Propagation Condition			•			ETU70			l	l	
CSI-RS resource			0			2			4		
configurations [2]											
CSI-RS subframe			0			0			0		
offset											
CSI-RS individual	[dB]		0			0			0		
offset [2]											
			Enable			Enable		Enable			
p-C-r10 [2]	dB		6			6			6		
	us		0								
configurations [2] CSI-RS subframe offset CSI-RS individual offset [2] CSI-RS muting p-C-r10 [2] Time offset to cell 1	dB us	0 0 Enable 6			0 0 Enable 6 0			0 0 Enable 6 2.3 (CP/2)			

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.

A.8.22.12.2 Test Requirements

The UE shall send one Event A6 triggered measurement report with a measurement reporting delay of less than 6.08s $(T_{identify_scc_SCE} + T_{measure_scc_CSI-RS} = 13*measCycleSCell + T_{measure_scc_CRS} + T_{measure_scc_CSI-RS} = 13*measCycleSCell + 3*measCycleSCell)$ from the beginning of time T2.

The UE shall send one Event A2 triggered measurement report for Cell 1 with a measurement reporting delay of less than 480 ms $(3*T_{DMTC_periodicity})$ from beginning of time T3.

The UE shall send one Event A2 triggered measurement report for Cell 2 with a measurement reporting delay of less than 960ms (3× measCycleSCell) from beginning of time T3.

The UE shall not send event triggered measurement reports as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90% for each of the events.

NOTE: The actual overall delays measured in the tests may be up to $2 \times TTI_{DCCH}$ higher than the measurement reporting delays above because of TTI insertion uncertainty of the measurement report in DCCH.

A.8.23 E-UTRAN Dual Connectivity Measurements

A.8.23.1 E-UTRAN FDD-FDD DC intra-frequency event triggered reporting with DRX in synchronous DC

A.8.23.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of intra frequency measurement. This test will partly verify the FDD intra-frequency cell search requirements in clause 8.8.2 and 8.8.3.

The test parameters are given in Table A.8.23.1.1-1, A.8.23.1.1-2, A.8.23.1.1-3 and A.8.23.1.1-4 below. In the test there are two cells: Cell1 and Cell2. Cell1 is PCell and Cell2 is PSCell. In the measurement control information it is indicated to the UE that event-triggered reporting with Events A1 (PCell and PSCell) and A2 (PCell and PSCell) is used. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. Prior to the start of the time duration T1, the UE shall be fully synchronized to Cell1 and Cell2. Prior to the start of the time duration T1, DRX configurations on MCG and SCG are enabled and DRX inactivity timers for MCG and SCG have already been expired. Immediately at beginning of T2 the transmission powers of Cell1 and Cell2 are reduced below a threshold value of event A2 and this shall result in reporting of Event A2 for PCell and PSCell, respectively. Immediately after receiving the reporting of event A2 for both PCell and PSCell, PDCCH indicating a new transmission on Cell1 shall be sent continuously to ensure that the UE would not enter the DRX state on MCG throughout T3. At beginning of T3 the transmission powers of Cell1 and Cell2 are increased above a threshold value of event A1 and this shall result in reporting of Event A1 for PCell and PSCell, respectively.

When MCG DRX is used, the uplink time alignment of Cell1 is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting in Cell1. When SCG DRX is used, the UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment in Cell2. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

Table A.8.23.1.1-1: General test parameters for E-UTRAN FDD-FDD DC intra-frequency event triggered reporting with DRX in synchronous DC

	Parameter	Unit	Value	Comment
E-UTR Numbe	A RF Channel er		1, 2	Two radio channels are used for this test.
Active	Active PCell		Cell1	PCell on RF channel number 1.
Config	Configured PSCell		Cell2	PSCell on RF channel number 2.
A1	Hysteresis	dB	0	Hysteresis for evaluation of event A1.
	Threshold RSRP	dBm	-95	Actual RSRP threshold for event A1. Needs to take absolute accuracy tolerance in clause 9.1.11.1 and 9.1.11.2 into account plus margin.
	Time To Trigger	S	0	
A2	Hysteresis	dB	0	Hysteresis for evaluation of event A2.
	Threshold RSRP dBm		-99	Actual RSRP threshold for event A2. Needs to take absolute accuracy tolerance in clause 9.1.11.1 and 9.1.11.2 into account plus margin.
	Time To Trigger	S	0	-
CP len	gth		Normal	
DRX	-		ON	DRX related parameters are defined in Table A.8.23.1.1-3
	dividual offset for n RF channel r 1	dB	0	Individual offset for cells on primary component carrier.
cells or	Cell-individual offset for cells on RF channel number 2		0	Individual offset for cells on carrier frequency of Cell2.
Filter c	Filter coefficient		0	L3 filtering is not used
T1		S	2	
T2		S	10	
T3	·	s	1	

Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Note 2: A UE capable of both synchronous and asynchronous DC operations is not required to pass this test case in accordance with the principle defined in section A.3.6.11.

Table A.8.23.1.1-2: Cell specific test parameters for E-UTRAN FDD-FDD DC intra-frequency event triggered reporting with DRX in synchronous DC

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	T3	T1	T2	Т3
E-UTRA RF Channel			1			2	
Number							
BW _{channel}	MHz		$MHz: N_{RB,c} =$			$MHz: N_{RB,c} =$	
			MHz: N _{RB,c} =			MHz: $N_{RB,c} =$	
			$MHz: N_{RB,c} =$			$MHz: N_{RB,c} =$	
PDSCH parameters:			MHz: R.5 FD			MHz: R.5 FD	
DL Reference			OMHz: R.0 FI			OMHz: R.0 FI	
Measurement Channel		20	MHz: R.4 F	טט	20	OMHz: R.4 F	טט
PCFICH/PDCCH/PHICH		51	MHz: R.11 F	DD	51	MHz: R.11 F	DD
parameters:		10	MHz: R.6 F	DD	10	MHz: R.6 F	DD
DL Reference		20	MHz: R.10 F	DD	20	MHz: R.10 F	DD
Measurement Channel OCNG Patterns		EN.	1Hz: OP.15 F	DD	EN.	1Hz: OP.15 F	DD
OCING Patterns			MHz: OP.15 F			MHz: OP.15 F	
			ипz. ОР.1 г ИНz: ОР.11 Г			мп2. ОР.1 Г ИНz: ОР.11 Г	
PBCH_RA	dB	201	vii 12. OF . I I I	טט	201	vii 12. OF . FF F	טט
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB				0		
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_PB	dB		0				
PDCCH_RA	dB		Ü				
PDCCH_PB	dB						
PDSCH RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
N_{oc} Note 2	dBm/15		-104		-104		
IV oc	KHz						
\hat{E}_s/N_{oc}	dB	16	-2.5	20	16	-2.5	20
\hat{E}_{s}/I_{ot}	dB	16	-2.5	20	16	-2.5	20
RSRP Note 3	dBm/15	-88	-106.5	-84	-88	-106.5	-84
Note 3	KHz					<u> </u>	
SCH_RP Note 3	dBm/15 KHz	-88	-106.5	-84	-88	-106.5	-84
lo Note 3	dBm/Ch	-60.11	-74.28	-56.18	-60.11	-74.28	-56.18
	BW	+10log	+10log	+10log	+10log	+10log	+10log
		$(N_{RB,c})$ $(N_{RB,c})$ $(N_{RB,c})$			(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)
Propagation Condition	+	/50) /50) /50) ETU70			/50)	ETU70	700)
Correlation Matrix and	+						
Antenna Configuration		1x2 Low				1x2 Low	
Receive Time offset to cell1 Note 5	μs		-			33	
Note 1. OCNC shall be a		.4 4 1 -				4	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for Noc to be fulfilled.

Note 3: RSRP, SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: The resources for uplink transmission in Cell1 are assigned to the UE prior to the start of time period T3.

Note 5: Receive time difference between subframe boundaries of signals received from the two cells at the UE

Receive time difference between subframe boundaries of signals received from the two cells at the UE antenna connector including time alignment error between the two cells.

Table A.8.23.1.1-3: DRX-Configuration for E-UTRAN FDD-FDD DC intra-frequency event triggered reporting with DRX in synchronous DC

Field	Cell1	Cell2	Comment
Field	Value	Value	
onDurationTimer	psf1	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	psf1	36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf1280	sf80	
shortDRX	disable	disable	

Table A.8.23.1.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN FDD-FDD DC intra-frequency event triggered reporting with DRX in synchronous DC

Field	Cell1	Cell2	Comment
Field	Value	Value	
TimeAlignmentTimer	sf500	sf500	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.23.1.2 Test Requirements

The UE shall send one Event A2 triggered report for PCell on PCell with a measurement reporting delay less than 6.4s (5*MCG_DRX cycle) from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH to obtain allocation to send the measurement report on PUSCH.

The UE shall send one Event A2 triggered report for PSCell on PCell with a measurement reporting delay less than 400ms (5*SCG_DRX cycle) from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH to obtain allocation to send the measurement report on PUSCH.

The UE shall send one Event A1 triggered report for PCell on PCell with a measurement reporting delay less than 200ms from the beginning of time period T3. The measurement reporting delay is defined as the time from the beginning of time period T3 to the moment when the UE sends the measurement report on PUSCH.

The UE shall send one Event A1 triggered report for PSCell on PCell with a measurement reporting delay less than 400ms (5*SCG_DRX cycle) from the beginning of time period T3. The measurement reporting delay is defined as the time from the beginning of time period T3 to the moment when the UE sends the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.23.2 E-UTRAN FDD-FDD DC intra-frequency event triggered reporting with DRX in asynchronous DC

A.8.23.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of intra frequency measurement. This test will partly verify the FDD intra-frequency cell search requirements in clause 8.8.2 and 8.8.3.

The test parameters are given in Table A.8.23.2.1-1, A.8.23.2.1-2, A.8.23.2.1-3 and A.8.23.2.1-4 below. In the test there are two cells: Cell1 and Cell2. Cell1 is PCell and Cell2 is PSCell. In the measurement control information it is indicated to the UE that event-triggered reporting with Events A1 (PCell and PSCell) and A2 (PCell and PSCell) is used. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. Prior to the start of the time duration T1, the UE shall be fully synchronized to Cell1 and Cell2. Prior to the start of the time duration T1, DRX configurations on MCG and SCG are enabled and DRX inactivity timers for MCG and SCG have already been expired.

Immediately at beginning of T2 the transmission powers of Cell1 and Cell2 are reduced below a threshold value of event A2 and this shall result in reporting of Event A2 for PCell and PSCell, respectively. Immediately after receiving the reporting of event A2 for both PCell and PSCell, PDCCH indicating a new transmission on Cell1 shall be sent continuously to ensure UE would not enter DRX state on MCG throughout T3. At beginning of T3 the transmission powers of Cell1 and Cell2 are increased above a threshold value of event A1 and this shall result in reporting of Event A1 for PCell and PSCell, respectively.

When MCG DRX is used, the uplink time alignment of Cell1 is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting in Cell1. When SCG DRX is used, the UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment in Cell2. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

Table A.8.23.2.1-1: General test parameters for E-UTRAN FDD-FDD DC intra-frequency event triggered reporting with DRX in asynchronous DC

	Parameter	Unit	Value	Comment
E-UTR Numbe	RA RF Channel er		1, 2	Two radio channels are used for this test.
Active	PCell		Cell1	PCell on RF channel number 1.
Config	gured PSCell		Cell2	PSCell on RF channel number 2.
A1	Hysteresis	dB	0	Hysteresis for evaluation of event A1.
	Threshold RSRP	dBm	-95	Actual RSRP threshold for event A1. Needs to take absolute accuracy tolerance in clause 9.1.11.1 and 9.1.11.2 into account plus margin.
	Time To Trigger	S	0	
A2	Hysteresis	dB	0	Hysteresis for evaluation of event A2.
	Threshold RSRP	dBm	-99	Actual RSRP threshold for event A2. Needs to take absolute accuracy tolerance in clause 9.1.11.1 and 9.1.11.2 into account plus margin.
	Time To Trigger	S	0	
CP len	ngth		Normal	
DRX			ON	DRX related parameters are defined in Table A.8.23.2.1-3
	dividual offset for n RF channel er 1	dB	0	Individual offset for cells on primary component carrier.
	dividual offset for n RF channel er 2	dB	0	Individual offset for cells on carrier frequency of Cell2.
Filter o	coefficient		0	L3 filtering is not used
T1		S	2	
T2		S	10	
T3		S	1	

Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Note 2: Even a UE capable of both synchronous and asynchronous DC operations is required to pass this test case in accordance with the principle defined in section A.3.11.

Table A.8.23.2.1-2: Cell specific test parameters for E-UTRAN FDD-FDD DC intra-frequency event triggered reporting with DRX in asynchronous DC

Parameter	Unit		Cell 1		Cell 2		
		T1	T2	Т3	T1	T2	Т3
E-UTRA RF Channel			1			2	
Number							
			$MHz: N_{RB,c} =$			MHz: N _{RB,c} =	
BW _{channel}	MHz		MHz: N _{RB,c} =		10MHz: $N_{RB,c} = 50$		
			MHz: N _{RB,c} =			MHz: N _{RB,c} =	
PDSCH parameters:			MHz: R.5 FD			MHz: R.5 FD	
DL Reference			MHz: R.0 F[OMHz: R.0 F[OMHz: R.4 F[
Measurement Channel			MHz: R.4 FI	טכ	20	JIVINZ. R.4 FL	טכ
PCFICH/PDCCH/PHICH parameters:			ИHz: R.11 F[51	MHz: R.11 F[DD
DL Reference		10	MHz: R.6 FI	DD	10	DMHz: R.6 FI	DD
Measurement Channel		20	MHz: R.10 F	DD	20	MHz: R.10 F	DD
Wedstrement onamer		5M	1Hz: OP.15 F	.DD	5M	1Hz: OP.15 F	חח
OCNG Patterns			MHz: OP.1 F			MHz: OP.1 F	
			лн. г. Ог. 11 ЛНz: ОР.11 F			инт <u>г</u> . ОР.11 Г	
PBCH_RA	dB	201	3 1	_ 	201		
PBCH_RB	dB						
PSS_RA	dB				0		
SSS RA	dB						
PCFICH_RB	dB						
PHICH RA	dB						
PHICH_PB	dB		0				
PDCCH_RA	dB						
PDCCH_PB	dB						
PDSCH_RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
$N_{oc}^{ m Note~2}$	dBm/15		-104		-104		
1 voc	KHz						
\hat{E}_s/N_{oc}	dB	16	-2.5	20	16	-2.5	20
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	16	-2.5	20	16	-2.5	20
RSRP Note 3	dBm/15 KHz	-88	-106.5	-84	-88	-106.5	-84
SCH_RP Note 3	dBm/15 KHz	-88	-106.5	-84	-88	-106.5	-84
lo Note 3	dBm/Ch	-60.11	-74.28	-56.18	-60.11	-74.28	-56.18
	BW	+10log	+10log	+10log	+10log	+10log	+10log
		(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}
		/50)	/50)	/50)	/50)	/50)	/50)
Propagation Condition		ETU70				ETU70	•
Correlation Matrix and						1x2 Low	
Antenna Configuration			1x2 Low			IXZ LOW	
Receive Time offset to cell1 Note 5	μs		-			500	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP, SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: The resources for uplink transmission in Cell1 are assigned to the UE prior to the start of time period T3.

Note 5: Receive time difference between subframe boundaries of signals received from the two cells at the UE antenna connector including time alignment error between the two cells.

Table A.8.23.2.1-3: DRX-Configuration for E-UTRAN FDD-FDD DC intra-frequency event triggered reporting with DRX in asynchronous DC

Field	Cell1	Cell2	Comment
Field	Value	Value	
onDurationTimer	psf1	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	psf1	36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf1280	sf80	
shortDRX	disable	disable	

Table A.8.23.2.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN FDD-FDD DC intra-frequency event triggered reporting with DRX in asynchronous DC

Field	Cell1	Cell2	Comment
i ieiu	Value	Value	
TimeAlignmentTimer	sf500	sf500	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.23.2.2 Test Requirements

The UE shall send one Event A2 triggered report for PCell on PCell with a measurement reporting delay less than 6.4s (5*MCG_DRX cycle) from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH to obtain allocation to send the measurement report on PUSCH.

The UE shall send one Event A2 triggered report for PSCell on PCell with a measurement reporting delay less than 400ms (5*SCG_DRX cycle) from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH to obtain allocation to send the measurement report on PUSCH.

The UE shall send one Event A1 triggered report for PCell on PCell with a measurement reporting delay less than 200ms from the beginning of time period T3. The measurement reporting delay is defined as the time from the beginning of time period T3 to the moment when the UE sends the measurement report on PUSCH.

The UE shall send one Event A1 triggered report for PSCell on PCell with a measurement reporting delay less than 400ms (5*SCG_DRX cycle) from the beginning of time period T3. The measurement reporting delay is defined as the time from the beginning of time period T3 to the moment when the UE sends the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.23.3 E-UTRAN TDD-TDD DC intra-frequency event triggered reporting with DRX in synchronous DC

A.8.23.3.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of intra frequency measurement. This test will partly verify the TDD intra-frequency cell search requirements in clause 8.8.2 and 8.8.3.

The test parameters are given in Table A.8.23.3.1-1, A.8.23.3.1-2, A.8.23.3.1-3 and A.8.23.3.1-4 below. In the test there are two cells: Cell1 and Cell2. Cell1 is PCell and Cell2 is PSCell. In the measurement control information it is indicated to the UE that event-triggered reporting with Events A1 (PCell and PSCell) and A2 (PCell and PSCell) is used. The test consists of three successive time periods, with duration of T1, T2 and T3, respectively. Prior to the start of the time duration T1, the UE shall be fully synchronized to Cell1 and Cell2. Prior to the start of the time duration T1, DRX configurations on MCG and SCG are enabled and DRX inactivity timers for MCG and SCG have already been expired.

Immediately at beginning of T2 the transmission powers of Cell1 and Cell2 are reduced below a threshold value of event A2 and this shall result in reporting of Event A2 for PCell and PSCell, respectively. Immediately after receiving the reporting of event A2 for both PCell and PSCell, PDCCH indicating a new transmission on Cell1 shall be sent continuously to ensure UE would not enter DRX state on MCG throughout T3. At beginning of T3 the transmission powers of Cell1 and Cell2 are increased above a threshold value of event A1 and this shall result in reporting of Event A1 for PCell and PSCell, respectively.

When MCG DRX is used, the uplink time alignment of Cell1 is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting in Cell1. When SCG DRX is used, the UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment in Cell2. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

Table A.8.23.3.1-1: General test parameters for E-UTRAN TDD-TDD DC intra-frequency event triggered reporting with DRX in synchronous DC

	Parameter Unit Value		Value	Comment
E-UTF	RA RF Channel	nel 1, 2		Two radio channels are used for this test.
Numb	er	1, 2		
Active	PCell		Cell1	PCell on RF channel number 1.
Config	gured PSCell		Cell2	PSCell on RF channel number 2.
A1	Hysteresis	dB	0	Hysteresis for evaluation of event A1.
	Threshold RSRP			Actual RSRP threshold for event A1.
		dBm	0.E	Needs to take absolute accuracy
		abili	-95	tolerance in clause 9.1.11.1 and 9.1.11.2
				into account plus margin.
	Time To Trigger	S	0	
A2	Hysteresis	dB	0	Hysteresis for evaluation of event A2.
	Threshold RSRP			Actual RSRP threshold for event A2.
		dBm	-99	Needs to take absolute accuracy
		abili	-99	tolerance in clause 9.1.11.1 and 9.1.11.2
				into account plus margin.
	Time To Trigger	S	0	
CP le	ngth		Normal	
Speci	al subframe		6	As specified in table 4.2-1 in TS 36.211.
	uration		0	The same configuration in both cells
Uplink	k-downlink		1	As specified in table 4.2-2 in TS 36.211.
config	uration		I	The same configuration in both cells
DRX			ON	DRX related parameters are defined in
DKX			ON	Table A.8.23.3.1-3
Cell-ir	ndividual offset for			Individual offset for cells on primary
cells o	on RF channel	dB	0	component carrier.
numb	er 1			
Cell-ir	ndividual offset for			Individual offset for cells on carrier frequency
	on RF channel	dB	0	of Cell2.
numb	er 2			
	coefficient		0	L3 filtering is not used
T1		S	5	
T2		S	10	
T3		S	1	
NOTE	. This test verifies t	ha DDM sass	. مرج مرح احجاز اجراء أجاري المرج ممرح مراز	dent of channel bandwidth and is norfermed

NOTE: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.23.3.1-2: Cell specific test parameters for E-UTRAN TDD-TDD DC intra-frequency event triggered reporting with DRX in synchronous DC

Parameter	Unit		Cell 1			Cell 2	
		T1	T2	Т3	T1	T2	T3
E-UTRA RF Channel			1			2	
Number							
BW _{channel}	MHz	$5MHz: N_{RB,c} = 25$				$MHz: N_{RB,c} = 1$	
			MHz: N _{RB,c} =			MHz: $N_{RB,c} =$	
			$MHz: N_{RB,c} =$			$MHz: N_{RB,c} =$	
PDSCH parameters:			MHz: R.4 TD			MHz: R.4 TD	
DL Reference			MHz: R.0 TI			MHz: R.0 TE	
Measurement Channel		20	MHz: R.3 TI	טע	20)MHz: R.3 TE	טכ
PCFICH/PDCCH/PHICH		51	MHz: R.11 T[DD	51	ИHz: R.11 Т	DD
parameters: DL Reference		10	MHz: R.6 TI	DD	10	MHz: R.6 TE	DD
Measurement Channel		20	MHz: R.10 T	DD	20	MHz: R.10 T	DD
OCNG Patterns	+	5 N	MHz: OP.9 TI	חר	E N	ЛНz: OP.9 TI	חח
OCING Patterns			MHz: OP.9 11			MHz: OP.9 11	
			MHz: OP.7 T			MHz: OP.7 T	
PBCH_RA	dB	20	IVII 12. OI ./ I	<i>DD</i>	20	IVII 12. OF .1 1	DD
PBCH_RB	dB						
PSS_RA	dB						
SSS_RA	dB						
PCFICH_RB	dB						
PHICH_RA	dB						
PHICH_PB	dB		0			0	
PDCCH_RA	dB		Ü			Ü	
PDCCH_PB	dB						
PDSCH RA	dB						
PDSCH_RB	dB						
OCNG_RA ^{Note 1}	dB						
OCNG_RB ^{Note 1}	dB						
N_{oc} Note 2	dBm/15		-104			-104	
IV _{oc}	KHz						
\hat{E}/N	dB	16	-2.5	20	16	-2.5	20
\hat{E}_s/N_{oc}							
\hat{E}_{s}/I_{ot}	dB	16	-2.5	20	16	-2.5	20
RSRP Note 3	dBm/15	-88	-106.5	-84	-88	-106.5	-84
1.0	KHz						0.
SCH_RP Note 3	dBm/15	-88	-106.5	-84	-88	-106.5	-84
	KHz						
lo Note 3	dBm/Ch	-60.11	-74.28	-56.18	-60.11	-74.28	-56.18
	BW	+10log	+10log	+10log	+10log	+10log	+10log
		$(N_{RB,c}$	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}
		(/50)	/50)	/50)	/50)	/50)	(/50)
Propagation Condition		ETU70				ETU70	
Correlation Matrix and		1x2 Low				1x2 Low	
Antenna Configuration		1X∠ LOW				IAZ LUW	
Receive Time offset to cell1 Note 5	μs		-			33	
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power							

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP, SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: The resources for uplink transmission in Cell1 are assigned to the UE prior to the start of time period T3.

Note 5: Receive time difference between subframe boundaries of signals received from the two cells at the UE antenna connector including time alignment error between the two cells.

Table A.8.23.3.1-3: DRX-Configuration for E-UTRAN TDD-TDD DC intra-frequency event triggered reporting with DRX in synchronous DC

Field	Cell1	Cell2	Comment
Field	Value	Value	
onDurationTimer	psf1	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	psf1	36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf1280	sf80	
shortDRX	disable	disable	

Table A.8.23.3.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN TDD-TDD DC intra-frequency event triggered reporting with DRX in synchronous DC

Field	Cell1	Cell2	Comment
rieiu	Value	Value	
TimeAlignmentTimer	sf500	sf500	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.23.3.2 Test Requirements

The UE shall send one Event A2 triggered report for PCell on PCell with a measurement reporting delay less than 6.4s (5*MCG_DRX cycle) from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH to obtain allocation to send the measurement report on PUSCH.

The UE shall send one Event A2 triggered report for PSCell on PCell with a measurement reporting delay less than 400ms (5*SCG_DRX cycle) from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE starts to send preambles on the PRACH to obtain allocation to send the measurement report on PUSCH.

The UE shall send one Event A1 triggered report for PCell on PCell with a measurement reporting delay less than 200ms from the beginning of time period T3. The measurement reporting delay is defined as the time from the beginning of time period T3 to the moment when the UE sends the measurement report on PUSCH.

The UE shall send one Event A1 triggered report for PSCell on PCell with a measurement reporting delay less than 400ms (5*SCG_DRX cycle) from the beginning of time period T3. The measurement reporting delay is defined as the time from the beginning of time period T3 to the moment when the UE sends the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.23.4 E-UTRAN FDD-FDD DC inter-frequency event triggered reporting with DRX in synchronous DC

A.8.23.4.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of inter frequency measurement. This test will partly verify the FDD inter-frequency cell search requirements in clause 8.8.4.

The test parameters are given in Table A.8.23.4.1-1, A.8.23.4.1-2, A.8.23.4.1-3 and A.8.23.4.1-4 below. In the test there are three cells: Cell1, Cell2 and Cell3. Cell1 is PCell, Cell2 is PSCell and Cell3 is a neighbour cell. In the measurement control information it is indicated to the UE that event-triggered reporting with Events A3 (PCell) is used. The test consists of two successive time periods, with duration of T1 and T2, respectively. Prior to the start of the time duration T1, the UE shall be fully synchronized to Cell1 and Cell2. During T1 the UE shall not have any information on Cell3.

Prior to the start of the time duration T1, DRX configurations on MCG and SCG are enabled and DRX inactivity timers for MCG and SCG have already been expired.

In this test, UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment in Cell1. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

Table A.8.23.4.1-1: General test parameters for E-UTRAN FDD-FDD DC inter-frequency event triggered reporting with DRX in synchronous DC

	Parameter	Unit	Value	Comment
E-UTF	RA RF Channel		1, 2, 3	Three radio channels are used for this
Numb	er		1, 2, 3	test.
Active	PCell		Cell1	PCell on RF channel number 1.
Confi	gured PSCell		Cell2	PSCell on RF channel number 2.
Neigh	bour cell		Cell3	Neighbour cell on RF channel number 3.
А3	Hysteresis	dB	0	Hysteresis for evaluation of event A3.
	A3-offset	dB	-6	
	Time To Trigger	S	0	
CP lei	ngth		Normal	
DRX			ON	DRX related parameters are defined in Table A.8.23.4.1-3
Measi	urement gap pattern		0	
	ndividual offset for on RF channel er 1	dB	0	Individual offset for cells on primary component carrier.
	ndividual offset for on RF channel er 2	dB	0	Individual offset for cells on carrier frequency of Cell2.
	ndividual offset for on RF channel er 3	dB	0	Individual offset for cells on carrier frequency of Cell3.
Filter	coefficient		0	L3 filtering is not used
T1		S	5	-
T2		S	5	

Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Note 2: A UE capable of both synchronous and asynchronous DC operations is not required to pass this test case in accordance with the principle defined in section A.3.6.11.

Table A.8.23.4.1-2: Cell specific test parameters for E-UTRAN FDD-FDD DC inter-frequency event triggered reporting with DRX in synchronous DC

Parameter	Unit	Cell1		Cell2		Cell3		
		T1	T2	T1	T2	T1	T2	
E-UTRA RF Channel Number			1		2		3	
BW _{channel}	MHz	10MHz:	5MHz: $N_{RB,c} = 25$ 10MHz: $N_{RB,c} = 50$ 20MHz: $N_{RB,c} = 100$		5MHz: N _{RB,c} = 25 10MHz: N _{RB,c} = 50 20MHz: N _{RB,c} = 100		$5MHz: N_{RB,c} = 25$ $10MHz: N_{RB,c} = 50$ $20MHz: N_{RB,c} = 100$	
PDSCH parameters: DL Reference Measurement Channel		5MHz: 10MHz:	R.5 FDD R.0 FDD R.4 FDD	5MHz: I 10MHz:	5MHz: R.5 FDD 10MHz: R.0 FDD 20MHz: R.4 FDD		-	
PCFICH/PDCCH/PHICH parameters: DL Reference Measurement Channel		10MHz:	R.11 FDD R.6 FDD R.10 FDD	10MHz:	5MHz: R.11 FDD 10MHz: R.6 FDD 20MHz: R.10 FDD		11 FDD R.6 FDD R.10 FDD	
OCNG Patterns		10MHz: (P.15 FDD OP.1 FDD OP.11 FDD	10MHz: (5MHz: OP.15 FDD 10MHz: OP.1 FDD 20MHz: OP.11 FDD		P.16 FDD OP.2 FDD P.12 FDD	
PBCH_RA PBCH_RB PSS_RA	dB dB dB							
SSS_RA PCFICH_RB PHICH_RA	dB dB dB			0		0		
PHICH_PB	dB		0					
PDCCH RA	dB				-		-	
PDCCH_PB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
$N_{oc}^{ m Note 2}$	dBm/15 KHz	-1	01	-1	01	N/A	-101	
\hat{E}_s/N_{oc}	dB	4	4	4	4	-infinity	7	
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	dB	4	4	4	4	-infinity	7	
RSRP Note 3	dBm/15 KHz	-97	-97	-97	-97	-infinity	-94	
SCH_RP Note 3	dBm/15 KHz	-97	-97	-97	-97	-infinity	-94	
To Note 3	dBm/Ch BW	-67.76 +10log (N _{RB,c} /50)	-67.76 +10log (N _{RB,c} /50)	-67.76 +10log (N _{RB,c} /50)	-67.76 +10log (N _{RB,c} /50)	N/A	-65.43 +10log (N _{RB,c} /50)	
Propagation Condition		ET	U70	ETU70		ETI	J70	
Correlation Matrix and Antenna Configuration		1x2	Low	1x2 Low		1x2	Low	
Receive Time offset to cell1 Note 4	μs		-	33		-		
Time offset to cell1	μs		-		-	3	3	
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power								

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP, SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: Receive time difference between subframe boundaries of signals received from the two cells at the UE antenna connector including time alignment error between the two cells.

Table A.8.23.4.1-3: DRX-Configuration for E-UTRAN FDD-FDD DC inter-frequency event triggered reporting with DRX in synchronous DC

Field	Cell1	Cell2	Comment
Field	Value	Value	
onDurationTimer	psf1	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	psf1	36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf80	sf1280	
shortDRX	disable	disable	

Table A.8.23.4.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN FDD-FDD DC inter-frequency event triggered reporting with DRX in synchronous DC

Field	Cell1	Cell2	Comment
rieiu	Value	Value	
TimeAlignmentTimer	sf500	sf500	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.23.4.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for Cell 3 on PCell, with a measurement reporting delay less than 3.84s from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE sends the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.23.5 E-UTRAN FDD-FDD DC inter-frequency event triggered reporting with DRX in asynchronous DC

A.8.23.5.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of inter frequency measurement. This test will partly verify the FDD inter-frequency cell search requirements in clause 8.8.4.

The test parameters are given in Table A.8.23.5.1-1, A.8.23.5.1-2, A.8.23.5.1-3 and A.8.23.5.1-4 below. In the test there are three cells: Cell1, Cell2 and Cell3. Cell1 is PCell, Cell2 is PSCell and Cell3 is a neighbour cell. In the measurement control information it is indicated to the UE that event-triggered reporting with Events A3 (PCell) is used. The test consists of two successive time periods, with duration of T1 and T2, respectively. Prior to the start of the time duration T1, the UE shall be fully synchronized to Cell1 and Cell2. During T1 the UE shall not have any information on Cell3. Prior to the start of the time duration T1, DRX configurations on MCG and SCG are enabled and DRX inactivity timers for MCG and SCG have already been expired.

In this test, UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment in Cell1. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

Table A.8.23.5.1-1: General test parameters for E-UTRAN FDD-FDD DC inter-frequency event triggered reporting with DRX in asynchronous DC

	Parameter	Unit	Value	Comment
E-UTR	E-UTRA RF Channel		1, 2, 3	Three radio channels are used for this
Numbe	Number		1, 2, 3	test.
Active	PCell		Cell1	PCell on RF channel number 1.
Config	ured PSCell		Cell2	PSCell on RF channel number 2.
Neighb	our cell		Cell3	Neighbour cell on RF channel number 3.
А3	Hysteresis	dB	0	Hysteresis for evaluation of event A3.
	A3-offset	dB	-6	
	Time To Trigger	S	0	
CP len	gth		Normal	
DRX			ON	DRX related parameters are defined in
			ON	Table A.8.23.4.1-3
Measu	rement gap pattern		0	
ld			0	
Cell-in	dividual offset for			Individual offset for cells on primary
cells o	n RF channel	dB	0	component carrier.
numbe	er 1			
	dividual offset for			Individual offset for cells on carrier frequency
	n RF channel	dB	0	of Cell2.
numbe				
	dividual offset for			Individual offset for cells on carrier frequency
	n RF channel	dB 0		of Cell3.
number 3				
	oefficient		0	L3 filtering is not used
T1		S	5	
T2		S	5	

Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Note 2: Even a UE capable of both synchronous and asynchronous DC operations is required to pass this test case in accordance with the principle defined in section A.3.11.

Table A.8.23.5.1-2: Cell specific test parameters for E-UTRAN FDD-FDD DC inter-frequency event triggered reporting with DRX in asynchronous DC

Parameter	Unit	Cell1		Cell2		Cell3		
		T1	T2	T1	T2	T1	T2	
E-UTRA RF Channel Number			1		2		3	
BW _{channel}	MHz	10MHz:	5MHz: $N_{RB,c} = 25$ 10MHz: $N_{RB,c} = 50$ 20MHz: $N_{RB,c} = 100$		5MHz: N _{RB,c} = 25 10MHz: N _{RB,c} = 50 20MHz: N _{RB,c} = 100		$5MHz: N_{RB,c} = 25$ $10MHz: N_{RB,c} = 50$ $20MHz: N_{RB,c} = 100$	
PDSCH parameters: DL Reference Measurement Channel		5MHz: 10MHz:	R.5 FDD R.0 FDD R.4 FDD	5MHz: 10MHz:	5MHz: R.5 FDD 10MHz: R.0 FDD 20MHz: R.4 FDD		-	
PCFICH/PDCCH/PHICH parameters: DL Reference Measurement Channel		10MHz:	R.11 FDD R.6 FDD R.10 FDD	10MHz:	5MHz: R.11 FDD 10MHz: R.6 FDD 20MHz: R.10 FDD		11 FDD R.6 FDD R.10 FDD	
OCNG Patterns		10MHz: (P.15 FDD OP.1 FDD OP.11 FDD	10MHz: (P.15 FDD OP.1 FDD OP.11 FDD	10MHz: 0	P.16 FDD OP.2 FDD P.12 FDD	
PBCH_RA PBCH_RB PSS_RA	dB dB dB							
SSS_RA PCFICH_RB PHICH_RA	dB dB dB			0		0		
PHICH_PB	dB		0					
PDCCH_RA	dB							
PDCCH_PB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
$N_{oc}^{ m Note 2}$	dBm/15 KHz	-1	01	-1	01	N/A	-101	
\hat{E}_s/N_{oc}	dB	4	4	4	4	-infinity	7	
\hat{E}_{s}/I_{ot}	dB	4	4	4	4	-infinity	7	
RSRP Note 3	dBm/15 KHz	-97	-97	-97	-97	-infinity	-94	
SCH_RP Note 3	dBm/15 KHz	-97	-97	-97	-97	-infinity	-94	
To Note 3	dBm/Ch BW	-67.76 +10log (N _{RB,c} /50)	-67.76 +10log (N _{RB,c} /50)	-67.76 +10log (N _{RB,c} /50)	-67.76 +10log (N _{RB,c} /50)	N/A	-65.43 +10log (N _{RB,c} /50)	
Propagation Condition		ET	U70	ETU70		ETI	J70	
Correlation Matrix and Antenna Configuration		1x2	1x2 Low		1x2 Low		Low	
Receive time offset to cell1 Note 4	μs		-	500		-		
Time offset to cell1	μs		-		-	4(00	
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted nower								

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP, SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: Receive time difference between subframe boundaries of signals received from the two cells at the UE antenna connector including time alignment error between the two cells.

Table A.8.23.5.1-3: DRX-Configuration for E-UTRAN FDD-FDD DC inter-frequency event triggered reporting with DRX in asynchronous DC

Field	Cell1	Cell2	Comment
rieid	Value	Value	
onDurationTimer	psf1	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	psf1	36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf80	sf1280	
shortDRX	disable	disable	

Table A.8.23.5.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN FDD-FDD DC inter-frequency event triggered reporting with DRX in asynchronous DC

Field	Cell1	Cell2	Comment
rieiu	Value	Value	
TimeAlignmentTimer	sf500	sf500	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.23.5.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for Cell 3 on PCell, with a measurement reporting delay less than 3.84s from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE sends the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.23.6 E-UTRAN TDD-TDD DC inter-frequency event triggered reporting with DRX in synchronous DC

A.8.23.6.1 Test Purpose and Environment

The purpose of this test is to verify that the UE makes correct reporting of inter frequency measurement. This test will partly verify the TDD inter-frequency cell search requirements in clause 8.8.4.

The test parameters are given in Table A.8.23.6.1-1, A.8.23.6.1-2, A.8.23.6.1-3 and A.8.23.6.1-4 below. In the test there are three cells: Cell1, Cell2 and Cell3. Cell1 is PCell, Cell2 is PSCell and Cell3 is a neighbour cell. In the measurement control information it is indicated to the UE that event-triggered reporting with Events A3 (PCell) is used. The test consists of two successive time periods, with duration of T1 and T2, respectively. Prior to the start of the time duration T1, the UE shall be fully synchronized to Cell1 and Cell2. During T1 the UE shall not have any information on Cell3. Prior to the start of the time duration T1, DRX configurations on MCG and SCG are enabled and DRX inactivity timers for MCG and SCG have already been expired.

In this test, UE needs to be provided at least once every 500ms with new Timing Advance Command MAC control element to restart the Time alignment timer to keep UE uplink time alignment in Cell1. Furthermore UE is allocated with PUSCH resource at every DRX cycle.

Table A.8.23.6.1-1: General test parameters for E-UTRAN TDD-TDD DC inter-frequency event triggered reporting with DRX in synchronous DC

Parameter	Unit	Value	Comment
E-UTRA RF Channel		1, 2, 3	Three radio channels are used for this
Number	1, 2, 3		test.
Active PCell		Cell1	PCell on RF channel number 1.
Configured PSCell		Cell2	PSCell on RF channel number 2.
Neighbour cell		Cell3	Neighbour cell on RF channel number 3.
A3 Hysteresis	dB	0	Hysteresis for evaluation of event A3.
A3-offset	dB	-6	
Time To Trigger	s	0	
CP length		Normal	
Special subframe		6	As specified in table 4.2-1 in TS 36.211.
configuration			The same configuration in both cells
Uplink-downlink		1	As specified in table 4.2-2 in TS 36.211.
configuration			The same configuration in both cells
DRX		ON	DRX related parameters are defined in
		011	Table A.8.23.4.1-3
Measurement gap pattern		0	
Id		· ·	
Cell-individual offset for		_	Individual offset for cells on primary
cells on RF channel	dB	0	component carrier.
number 1			
Cell-individual offset for			Individual offset for cells on carrier frequency of Cell2.
cells on RF channel	dB	0	or cellz.
number 2			La dividual offert for a lla conservation for successive
Cell-individual offset for	ID.		Individual offset for cells on carrier frequency of Cell3.
cells on RF channel	dB	0	or cens.
number 3			100
Filter coefficient		0	L3 filtering is not used
T1	S	5	
Note 1. This test verifies t	S	5	is independent of abancal bandwidth and is

Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Table A.8.23.4.1-2: Cell specific test parameters for E-UTRAN TDD-TDD DC inter-frequency event triggered reporting with DRX in synchronous DC

Parameter	Unit	Cell1		Cell2		Cell3		
		T1	T2	T1	T2	T1	T2	
E-UTRA RF Channel Number			1	2		3	3	
BW _{channel}	MHz	10MHz:	5MHz: N _{RB,c} = 25 10MHz: N _{RB,c} = 50 20MHz: N _{RB,c} = 100		5MHz: $N_{RB,c} = 25$ 10MHz: $N_{RB,c} = 50$ 20MHz: $N_{RB,c} = 100$		5MHz: $N_{RB,c} = 25$ 10MHz: $N_{RB,c} = 50$ 20MHz: $N_{RB,c} = 100$	
PDSCH parameters: DL Reference Measurement Channel		5MHz: 10MHz:	R.4 TDD R.0 TDD R.3 TDD	5MHz: I 10MHz:	R.4 TDD R.0 TDD R.3 TDD	-		
PCFICH/PDCCH/PHICH parameters: DL Reference Measurement Channel		10MHz:	R.11 TDD R.6 TDD R.10 TDD	10MHz:	5MHz: R.11 TDD 10MHz: R.6 TDD 20MHz: R.10 TDD		11 TDD R.6 TDD R.10 TDD	
OCNG Patterns		10MHz: (OP.9 TDD OP.1 TDD OP.7 TDD	10MHz: (P.9 TDD OP.1 TDD OP.7 TDD	10MHz: 0	P.10 TDD OP.2 TDD OP.8 TDD	
PBCH_RA PBCH_RB	dB dB							
PSS_RA	dB							
SSS_RA	dB							
PCFICH RB	dB							
PHICH_RA	dB							
PHICH_PB	dB		0	0)	
PDCCH RA	dB			-				
PDCCH_PB	dB							
PDSCH_RA	dB							
PDSCH_RB	dB							
OCNG_RA ^{Note 1}	dB							
OCNG_RB ^{Note 1}	dB							
$N_{oc}^{ m Note 2}$	dBm/15 KHz	-1	01	-1	01	N/A	-101	
\hat{E}_s/N_{oc}	dB	4	4	4	4	-infinity	7	
\hat{E}_{s}/I_{ot}	dB	4	4	4	4	-infinity	7	
RSRP Note 3	dBm/15 KHz	-97	-97	-97	-97	-infinity	-94	
SCH_RP Note 3	dBm/15 KHz	-97	-97	-97	-97	-infinity	-94	
lo Note 3	dBm/Ch BW	-67.76 +10log (N _{RB,c} /50)	-67.76 +10log (N _{RB,c} /50)	-67.76 +10log (N _{RB,c} /50)	-67.76 +10log (N _{RB,c} /50)	N/A	-65.43 +10log (N _{RB,c} /50)	
Propagation Condition		ET	U70	ETU70		ETI	J70	
Correlation Matrix and Antenna Configuration		1x2	Low	1x2 Low		1x2	Low	
Receive Time offset to cell1 Note 4	μs		-	33		-		
Time offset to cell1	μs		-		-	3	3	
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted nower								

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP, SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: Receive time difference between subframe boundaries of signals received from the two cells at the UE antenna connector including time alignment error between the two cells.

Table A.8.23.6.1-3: DRX-Configuration for E-UTRAN TDD-TDD DC inter-frequency event triggered reporting with DRX in synchronous DC

Field	Cell1	Cell2	Comment
rieid	Value	Value	
onDurationTimer	psf1	psf1	As specified in clause 6.3.2 in TS
drx-InactivityTimer	psf1	psf1	36.331
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf80	sf1280	
shortDRX	disable	disable	

Table A.8.23.6.1-4: *TimeAlignmentTimer* -Configuration for E-UTRAN TDD-TDD DC inter-frequency event triggered reporting with DRX in synchronous DC

Field	Cell1	Cell2	Comment
rieiu	Value	Value	
TimeAlignmentTimer	sf500	sf500	As specified in clause 6.3.2 in TS 36.331
sr-ConfigIndex	0	0	For further information see clause 6.3.2 in TS 36.331 and section10.1 in TS 36.213.

A.8.23.6.2 Test Requirements

The UE shall send one Event A3 triggered measurement report for Cell 3 on PCell, with a measurement reporting delay less than 3.84s from the beginning of time period T2. The measurement reporting delay is defined as the time from the beginning of time period T2 to the moment when the UE sends the measurement report on PUSCH.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The rate of correct events observed during repeated tests shall be at least 90%.

A.8.23.7 E-UTRAN FDD-FDD Addition and Release Delay of known PSCell in Synchronous DC

A.8.23.7.1 Test Purpose and Environment

The purpose of this test is to verify that the PSCell addition and release delays under synchronous dual connectivity are within the requirements stated in section 7.14 for the case when the PSCell is known by the UE at the time of addition.

The test parameters are given in Tables A.8.23.7.1-1 and cell-specific parameters in A.8.23.7.1-2 below. The test consists of five successive time periods with duration of T1, T2, T3, T4 and T5 respectively. There are two carriers each with one cell. Before the test starts the UE is connected to Cell 1 (PCell) on radio channel 1 (PCC) but is not aware of Cell 2 on radio channel 2. The UE is only monitoring the PCC. During T1 only Cell1 is known to the UE.

Before the start of T2 it is indicated to the UE in the measurement control information that event-triggered reporting with Event A4 is configured for neighbour cell (Cell2). Before the start of T2 the UE is configured with the measurement gaps (gap pattern Id # 0). The Cell2 becomes known to the UE during T2. Therefore during T2 the UE shall report Event A4. After receiving the Event A4, the test system shall send a RRC message to the UE to release the measurement gaps.

The test system shall send a RRC message to the UE to add PSCell (Cell 2) on radio channel 2. The RRC message (to add PSCell) also includes a request for the UE to start periodic CSI reporting for the PSCell after the PSCell has been successfully added. The RRC message to add PSCell shall be sent to the UE during period T2, after the measurement gaps are released by the test system. The point in time at which the RRC message to add PSCell (Cell2) is received at the UE antenna connector defines the start of time period T3.

The test system shall observe the periodic reporting of CSI for PSCell during T4. The point in time at which the UE has sent PRACH to the PSCell (Cell 2) defines the start of time period T4.

The test system shall send a RRC message to the UE to release PSCell (Cell 2) on radio channel 2. The RRC message to release PSCell (Cell2) shall be sent to the UE during time period T4, after the UE has sent at least one CQI report with non-zero CQI index for PSCell (Cell 2). The point in time at which the RRC message to release PSCell (Cell2) is received at the UE antenna connector defines the start of time period T5.

Table A.8.23.7.1-1: General test parameters for known PSCell addition and release case

F	Parameter		Value	Comment
E-UTRA RF	Channel Number		1, 2	Two radio channels are used for this test
Initial	Active PCell		Cell1	PCell on RF channel number 1.
Condition	Neighbour cell	1	Cell2	Neighbour cell on RF channel number 2.
Final	Active PCell	1	Cell1	PCell on RF channel number 1.
Condition	PSCell	1	Cell2	PSCell on RF channel number 2.
A4	Hysteresis	dB	0	Hysteresis for evaluation of event A4.
	Threshold RSRP	dBm	-93	Actual RSRP threshold for event A4. Needs to
				take absolute accuracy tolerance in section
				9.1.11.1 into account plus margin.
	Time To Trigger	S	0	
CP length			Normal	
DRX			OFF	Continuous monitoring of primary cell
Measuremer	Measurement gap pattern Id		0	Gaps are configured before T2 and released before T3.
	iodicity and offset index on cell2		0	CQI reporting for PSCell every second subframe
	al offset for cells on	dB	0	Individual offset for cells on primary component carrier.
Cell-individua RF channel	al offset for cells on number 2	dB	0	Individual offset for cells on carrier frequency of cell2.
T1			5	During this time the PCell shall be known and cell2 shall be unknown.
T2		S	≤ 5	During this time the UE shall identify neighbour cell (cell2) and report event A4.
T3	T3		1	During this time the UE adds the PSCell.
T4		s	1	During this time the UE sends CSI reports for PSCell.
T5		S	1	During this time the UE releases the PSCell.

Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Note 2: A UE capable of both synchronous and asynchronous DC operations is not required to pass this test case in accordance with the principle defined in section A.3.6.11.

Table A.8.23.7.1-2: Cell specific test parameters for E-UTRAN FDD known PSCell addition and release

Parameter	Unit			Cell 1					Cell 2			
		T1	T2	T3	T4	T5	T1	T2	Т3	T4	T5	
E-UTRA RF Channel Number				1					2			
BW _{channel}	MHz		5MI	Hz: N _{RB,c}	= 25		5MHz: N _{RB,c} = 25					
		10MHz: $N_{RB,c} = 50$					$10MHz: N_{RB,c} = 50$					
		20MHz: N _{RB,c} = 100					20MHz: N _{RB,c} = 100					
PDSCH parameters:				Hz: R.5 I					-			
DL Reference				/lHz: R.0								
Measurement			201	//Hz: R.4	FDD							
Channel				L D 44	EDD		EMILT, D.44 EDD					
PCFICH/PDCCH/PHI				Hz: R.11			5MHz: R.11 FDD					
CH parameters: DL Reference				//Hz: R.6 Hz: R.10			10MHz: R.6 FDD					
Measurement			2010	IMZ. K. 10	ירטט		20MHz: R.10 FDD					
Channel												
OCNG Patterns			5ML	lz: ∩P 15	FDD			5MH:	7: OP 16	FDD		
		5MHz: OP.15 FDD 10MHz: OP.1 FDD					5MHz: OP.16 FDD 10MHz: OP.2 FDD					
		20MHz: OP.11 FDD					20MHz: OP.12 FDD					
PBCH_RA	dB											
PBCH_RB	dB											
PSS_RA	dB											
SSS_RA	dB											
PCFICH_RB	dB											
PHICH_RA	dB											
PHICH_RB	dB			0			0					
PDCCH_RA	dB											
PDCCH_RB	dB											
PDSCH_RA	dB											
PDSCH_RB	dB											
OCNG_RA ^{Note 1}	dB											
OCNG_RB ^{Note 1}	dB											
Noc Note 2	dBm/15			-101			N/A	N/A -85				
A 1	kHz	4.0	1 40	1 40	1.0	- 10						
Ê _s /N _{oc}	dB	19	19	19	19	19	-infinity	0	0	0	0	
Ê _s /I _{ot} RSRP Note 3	dB	19	19	19	19	19	infinity	0	0	0	0	
RSRP	dBm/15 kHz	-82	-82	-82	-82	-82	-infinity	-85	-85	-85	-85	
SCH_RP Note 3	dBm/15	-82	-82	-82	-82	-82	-infinity	-85	-85	-85	-85	
SUI_KF	kHz	-02	-02	-02	-02	-02	-irillility	-00	-00	-00	-00	
lo Note 3	dBm/C	-54.16	-54.16	-54.16	-54.16	-54.16	N/A	-54.21	-54.21	-54.21	-54.21	
10	h BW	+10log	+10log	+10log	+10log	+10log		+10log	+10log	+10log	+10log	
	""	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}		(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	
		/50)	/50)	/50)	/50)	/50)		/50)	/50)	/50)	/50)	
Propagation Condition	1			AWGN			AWGN					
Antenna Configuration		1x2					1x2					
Receive time offset to cell1 Note 4	μs	-					33					
PRACH configuration Index ^{Note 5}		4 2										
	Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is											

Note 4: Receive time difference between subframe boundaries of signals received from the two cells at the UE antenna connector including time alignment error between the two cells.

Note 5: As specified in table 5.7.1-2 in TS 36.211.

Note 6: The uplink resources for CSI reporting are assigned to the UE prior to the start of time period T4.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: Ê_s/I_{ot}, RSRP, SCH_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.23.7.2 Test Requirements

The UE shall transmit the PRACH to PSCell at latest 115 ms into T3.

The UE shall send at least one CSI report for PSCell with non-zero CQI index during T4.

The UE shall stop sending CSI reports for PSCell in at latest 16ms into T5.

All of the above test requirements shall be fulfilled in order for the observed PSCell addition delay and PSCell release delay to be counted as correct. The rate of correct observed PSCell addition delay and PSCell release delay during repeated tests shall be at least 90%.

NOTE: The PSCell addition delay can be expressed as follows as specified in Clause 7.14.2:

$$T_{config\ PSCell} = 15ms + T_{activation\ time} + 50ms + T_{PCell\ DU} + T_{PSCell\ DU}$$

Where:

Tactivation_time = 20 ms (cell2 is known to the UE);

 $T_{PCell_DU} = 0$ (due to PRACH configurations in cell1 and cell2 being orthogonal in time, i.e. non-overlapping in time);

 $T_{PSCell\ DU} = 30 \text{ ms}$ (delay due to PRACH transmission to cell2).

This gives a total of 115 ms.

A.8.23.8 E-UTRAN FDD-FDD Addition and Release Delay of known PSCell in Asynchronous DC

A.8.23.8.1 Test Purpose and Environment

The purpose of this test is to verify that the PSCell addition and release delays under asynchronous dual connectivity are within the requirements stated in section 7.14 for the case when the PSCell is known by the UE at the time of addition.

The test parameters are given in Tables A.8.23.8.1-1 and cell-specific parameters in A.8.23.8.1-2 below. The test consists of five successive time periods with duration of T1, T2, T3, T4 and T5 respectively. There are two carriers each with one cell. Before the test starts the UE is connected to Cell 1 (PCell) on radio channel 1 (PCC) but is not aware of Cell 2 on radio channel 2. The UE is only monitoring the PCC. During T1 only Cell1 is known to the UE.

Before the start of T2 it is indicated to the UE in the measurement control information that event-triggered reporting with Event A4 is configured for neighbour cell (Cell2). Before the start of T2 the UE is configured with the measurement gaps (gap pattern Id # 0). The Cell2 becomes known to the UE during T2. Therefore during T2 the UE shall report Event A4. After receiving the Event A4, the test system shall send a RRC message to the UE to release the measurement gaps.

The test system shall send a RRC message to the UE to add PSCell (Cell 2) on radio channel 2. The RRC message (to add PSCell) also includes a request for the UE to start periodic CSI reporting for the PSCell after the PSCell has been successfully added. The RRC message to add PSCell shall be sent to the UE during period T2, after the measurement gaps are released by the test system. The point in time at which the RRC message to add PSCell (Cell2) is received at the UE antenna connector defines the start of time period T3.

The test system shall observe the periodic reporting of CSI for PSCell during T4. The point in time at which the UE has sent PRACH to the PSCell (Cell 2) defines the start of time period T4.

The test system shall send a RRC message to the UE to release PSCell (Cell 2) on radio channel 2. The RRC message to release PSCell (Cell2) shall be sent to the UE during time period T4, after the UE has sent at least one CQI report with non-zero CQI index for PSCell (Cell 2). The point in time at which the RRC message to release PSCell (Cell2) is received at the UE antenna connector defines the start of time period T5.

Table A.8.23.8.1-1: General test parameters for known PSCell addition and release case

Parameter		Unit	Value	Comment			
E-UTRA RF Channel Number			1, 2	Two radio channels are used for this test			
Initial	Active PCell		Cell1	PCell on RF channel number 1.			
Condition	Neighbour cell		Cell2	Neighbour cell on RF channel number 2.			
Final	Active PCell		Cell1	PCell on RF channel number 1.			
Condition	PSCell		Cell2	PSCell on RF channel number 2.			
A4	Hysteresis	dB	0	Hysteresis for evaluation of event A4.			
	Threshold RSRP	dBm	-93	Actual RSRP threshold for event A4. Needs to take absolute accuracy tolerance in section 9.1.11.1 into account plus margin.			
	Time To Trigger	S	0				
CP length			Normal				
DRX			OFF	Continuous monitoring of primary cell			
Measurement gap pattern Id			0	Gaps are configured before T2 and released before T3.			
CQI/PMI periodicity and offset configuration index on cell2			0	CQI reporting for PSCell every second subframe			
Cell-individual offset for cells on RF channel number 1		dB	0	Individual offset for cells on primary component carrier.			
Cell-individual offset for cells on RF channel number 2		dB	0	Individual offset for cells on carrier frequency of cell2.			
T1		S	5	During this time the PCell shall be known and cell2 shall be unknown.			
T2		S	≤ 5	During this time the UE shall identify neighbour cell (cell2) and report event A4.			
T3		S	1	During this time the UE adds the PSCell.			
T4		S	1	During this time the UE sends CSI reports for PSCell.			
T5		S	1	During this time the UE releases the PSCell.			

Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1. Even a UE capable of both synchronous and asynchronous DC operations is required to pass this test case in

Note 2: accordance with the principle defined in section A.3.11.

Table A.8.22.8.1-2: Cell specific test parameters for E-UTRAN FDD known PSCell addition and release

Parameter	Unit			Cell 1					Cell 2		
1	İ	T1	T2	T3	T4	T5	T1	T2	Т3	T4	T5
E-UTRA RF Channel				1					2		
Number											
BW _{channel}	MHz		5MHz: $N_{RB,c} = 25$					łz: N _{RB,c} :			
				Hz: N _{RB,c}					Hz: N _{RB,c}		
				Hz: N _{RB,c}				20MF	łz: N _{RB,c} :	= 100	
PDSCH parameters: DL				Hz: R.5 F					-		
Reference				//Hz: R.0							
Measurement Channel				//Hz: R.4							
PCFICH/PDCCH/PHIC				Hz: R.11					lz: R.11 l		
H parameters: DL				//Hz: R.6					Hz: R.6 I		
Reference			20M	Hz: R.10	FDD			20MI	Hz: R.10	FDD	
Measurement Channel											
OCNG Patterns				lz: OP.15					z: OP.16		
									Hz: OP.2		
		<u> </u>	10MHz: OP.1 FDD 20MHz: OP.11 FDD					20MF	lz: OP.12	: FDD	
PBCH_RA	dB										
PBCH_RB	dB										
PSS_RA	dB										
SSS_RA	dB										
PCFICH_RB	dB										
PHICH_RA	dB										
PHICH_RB	dB			0			0				
PDCCH_RA	dB										
PDCCH_RB	dB										
PDSCH_RA	dB										
PDSCH_RB	dB										
OCNG_RA ^{Note 1}	dB										
OCNG_RB ^{Note 1}	dB	1									
N _{oc} Note 2	dBm/15			-101			N/A		-8	35	
	kHz										
Ê _s /N _{oc}	dB	19	19	19	19	19	_	0	0	0	0
_5, 100	42	.				10	infinity				
Ê _s /I _{ot}	dB	19	19	19	19	19	infinity	0	0	0	0
RSRP Note 3	dBm/15	-82	-82	-82	-82	-82	-	-85	-85	-85	-85
	kHz	02	02	02	02	02	infinity	00			
SCH_RP Note 3	dBm/15	-82	-82	-82	-82	-82	-	-85	-85	-85	-85
-	kHz	02	02	02	02	02	infinity	00			
lo Note 3	dBm/C	-54.16	-54.16	-54.16	-54.16	-54.16	N/A	-54.21	-54.21	-54.21	-54.21
	h BW	+10log	+10log	+10log	+10log	+10log		+10log	+10log	+10log	+10log
		(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}		(N _{RB,c}	(N _{RB,c}	(N _{RB,c}	(N _{RB,c}
		/50)	/50)	/50)	/50)	/50)		/50)	/50)	/50)	/50)
Propagation Condition				AWGN					AWGN		
Antenna Configuration				1x2					1x2		
Receive time offset to	ne.	_		_]		500		
cell1 Note 4	μs										
			· · · · · · · · · · · · · · · · · · ·								
PRACH configuration Index ^{Note 5}	l			4					2		

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: Ê_s/I_{ot}, RSRP, SCH_RP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: Receive time difference between subframe boundaries of signals received from the two cells at the UE antenna connector including time alignment error between the two cells.

Note 5: As specified in table 5.7.1-2 in TS 36.211

Note 6: The uplink resources for CSI reporting are assigned to the UE prior to the start of time period T4.

A.8.23.8.2 Test Requirements

The UE shall transmit the PRACH to PSCell at latest 115 ms into T3.

The UE shall send at least one CSI report for PSCell with non-zero CQI index during T4.

The UE shall stop sending CSI reports for PSCell in at latest 16ms into T5.

All of the above test requirements shall be fulfilled in order for the observed PSCell addition delay and PSCell release delay to be counted as correct. The rate of correct observed PSCell addition delay and PSCell release delay during repeated tests shall be at least 90%.

NOTE: The PSCell addition delay can be expressed as follows as specified in Clause 7.14.2:

$$T_{config_PSCell} = 15ms + T_{activation_time} + 50ms + T_{PCell_DU} + T_{PSCell_DU}$$

Where:

Tactivation_time = 20 ms (cell2 is known to the UE);

 $T_{PCell_DU} = 0$ (due to PRACH configurations in cell1 and cell2 being orthogonal in time, i.e. non-overlapping in time);

 $T_{PSCell_DU} = 30 \text{ ms}$ (delay due to PRACH transmission to cell2).

This gives a total of 115 ms.

A.8.23.9 E-UTRAN TDD Addition and Release Delay of known PSCell in Synchronous DC

A.8.23.9.1 Test Purpose and Environment

The purpose of this test is to verify that the PSCell addition and release delays under synchronous dual connectivity are within the requirements stated in section 7.14 for the case when the PSCell is known by the UE at the time of addition.

The test parameters are given in Tables A.8.23.9.1-1 and cell-specific parameters in A.8.23.9.1-2 below. The test consists of five successive time periods, with duration of T1, T2, T3, T4 and T5 respectively. There are two carriers each with one cell. Before the test starts the UE is connected to Cell 1 (PCell) on radio channel 1 (PCC) but is not aware of Cell 2 on radio channel 2. The UE is only monitoring the PCC. During T1 only Cell1 is known to the UE.

Before the start of T2 it is indicated to the UE in the measurement control information that event-triggered reporting with Event A4 is configured for neighbour cell (Cell2). Before the start of T2 the UE is configured with the measurement gaps (gap pattern Id # 0). The Cell2 becomes known to the UE during T2. Therefore during T2 the UE shall report Event A4. After receiving the Event A4, the test system shall send a RRC message to the UE to release the measurement gaps.

The test system shall send a RRC message to the UE to add PSCell (Cell 2) on radio channel 2. The RRC message (to add PSCell) also includes a request for the UE to start periodic CSI reporting for the PSCell after the PSCell has been successfully added. The RRC message to add PSCell shall be sent to the UE during period T2, after the measurement gaps are released by the test system. The point in time at which the RRC message to add PSCell (Cell2) is received at the UE antenna connector defines the start of time period T3.

The test system shall observe the periodic reporting of CSI for PSCell during T4. The point in time at which the UE has sent PRACH to the PSCell (Cell 2) defines the start of time period T4.

The test system shall send a RRC message to the UE to release PSCell (Cell 2) on radio channel 2. The RRC message to release PSCell (Cell2) shall be sent to the UE during time period T4, after the UE has sent at least one CQI report with non-zero CQI index for PSCell (Cell 2). The point in time at which the RRC message to release PSCell (Cell2) is received at the UE antenna connector defines the start of time period T5.

Table A.8.23.9.1-1: General test parameters for known PSCell addition and release case

Pa	rameter	Unit	Value	Comment
E-UTRA RF (Channel Number		1, 2	Two radio channels are used for this test
Initial	Active PCell		Cell1	PCell on RF channel number 1.
Condition	Neighbour cell		Cell2	Neighbour cell on RF channel number 2.
Final	Active PCell		Cell1	PCell on RF channel number 1.
Condition	PSCell		Cell2	PSCell on RF channel number 2.
A4	Hysteresis	dB	0	Hysteresis for evaluation of event A4.
	Threshold	dBm	-93	Actual RSRP threshold for event A4. Needs to
	RSRP			take absolute accuracy tolerance in section
				9.1.11.1 into account plus margin.
	Time To	S	0	
	Trigger		U	
CP length			Normal	
DRX			OFF	Continuous monitoring of primary cell
Measuremen	t gap pattern Id		0	Gaps are configured before T2 and released
				before T3.
Special subfra	ame configuration		6	As specified in table 4.2-1 in TS 36.211
Uplink-downli	nk configuration		1	As specified in table 4.2-2 in TS 36.211
PRACH confi	guration on cell2		53	As specified in table 5.7.1-3 in TS 36.211
CQI/PMI peri	odicity and offset		0	CQI reporting for PSCell every uplink subframe
configuration	index on cell2		U	
Cell-individua	I offset for cells on	dB	0	Individual offset for cells on primary component
RF channel n	umber 1	uБ	O	carrier.
Cell-individua	I offset for cells on	dB	0	Individual offset for cells on carrier frequency of
RF channel n	umber 2	uБ	U	cell2.
T1		s	5	During this time the PCell shall be known and
		3	5	cell2 shall be unknown.
T2		S	≤ 5	During this time the UE shall identify neighbour
		3	1 0	cell (cell2) and report event A4.
T3		S	1	During this time the UE adds the PSCell.
T4		S	1	During this time the UE sends CSI reports for
		3	· · · · · · · · · · · · · · · · · · ·	PSCell.
T5		S	1	During this time the UE releases the PSCell.
Note 1: Th	is test verifies the RF	RM requii	ement which is	s independent of channel bandwidth and is

Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.11.

Table A.8.23.9.1-2: Cell specific test parameters for E-UTRAN TDD known PSCell addition and release

Parameter	Unit			Cell 1					Cell 2		
		T1	T2	Т3	T4	T5	T1	T2	T3	T4	T5
E-UTRA RF Channel Number				1					2		
BW _{channel}	MHz		5MI	Hz: N _{RB,c}	= 25		5MHz: N _{RB,c} = 25				
			$10MHz: N_{RB,c} = 50$				Hz: N _{RB,c}				
				Hz: N _{RB,c}				20MF	lz: N _{RB,c} :	= 100	
PDSCH parameters: DL				IHz: R.4					-		
Reference				/lHz: R.0							
Measurement Channel				//Hz: R.3					. =		
PCFICH/PDCCH/PHIC				Hz: R.11					lz: R.11		
H parameters: DL				//Hz: R.6					IHz: R.6		
Reference			20IV	IHz: R.10	טטוי			ZUIVII	Hz: R.10	טטו	
Measurement Channel OCNG Patterns			ENAL	Hz: OP.9	TDD			ENALL	z: OP.10	TDD	
OCNG Patterns				¬z. ОР.9 Hz: ОР.1					z. OP.10 Hz: OP.2		
				Hz: OP.1					чz. ОР.2 чz: ОР.8		
PBCH_RA	dB		20101	. 12. 01 .1	טטו			201111	.2. 01 .0	יטטי	
PBCH_RB	dB	1									
PSS_RA	dB										
SSS_RA	dB										
PCFICH_RB	dB										
PHICH_RA	dB										
PHICH_RB	dB			0			0				
PDCCH_RA	dB			ŭ					· ·		
PDCCH_RB	dB										
PDSCH_RA	dB										
PDSCH_RB	dB										
OCNG_RA ^{Note 1}	dB	1									
OCNG_RB ^{Note 1}	dB										
Noc Note 2	dBm/15			-101			N/A	-85			
	kHz										
Ê _s /N _{oc}	dB	19	19	19	19	19	- infinity	0	0	0	0
\hat{E}_s/I_ot	dB	19	19	19	19	19	infinity	0	0	0	0
RSRP Note 3	dBm/15	-82	-82	-82	-82	-82	- 1	-85	-85	-85	-85
	kHz						infinity				
SCH_RP Note 3	dBm/15	-82	-82	-82	-82	-82	-	-85	-85	-85	-85
NI-I- W	kHz						infinity				
lo Note 3	dBm/C	-54.16	-54.16	-54.16	-54.16	-54.16	N/A	-54.21	-54.21	-54.21	-54.21
	h BW	+10log	+10log	+10log	+10log	+10log		+10log	+10log	+10log	+10log
		(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)		(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)
Propagation Condition		700)	700)	AWGN	,00)	700)		,00)	AWGN	,00,	, , , ,
Antenna Configuration				1x2					1x2		
Receive time offset to cell1 Note 4	μs			-					33		
PRACH configuration Index ^{Note 5}				56					50		
Note 1: OCNG shall be	used such th	at all cells	are fully a	llocated ar	nd a const	ant total tra	nsmitted n	ower spec	tral densit	v is achiev	ed for all
OFDM symbols. Note 2: Interference from			•				·	•	,		
shall be modelle	ed as AWGN	of appropri	riate power	r for N _{oc} to	be fulfilled	d.					
Note 3: Ê _s /I _{ot} , RSRP, SO							or informati	on purpos	es. They a	re not sett	able

Note 3: Ê_s/l_{ot}, RSRP, SCH_RP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.23.9.2 Test Requirements

The UE shall transmit the PRACH to PSCell at latest 115 ms into T3.

The UE shall send at least one CSI report for PSCell with non-zero CQI index during T4.

Note 4: Receive time difference between subframe boundaries of signals received from the two cells at the UE antenna connector including time alignment error between the two cells.

Note 5: As specified in table 5.7.1-3 in TS 36.211

Note 6: The uplink resources for CSI reporting are assigned to the UE prior to the start of time period T4.

The UE shall stop sending CSI reports for PSCell in at latest 16ms into T5.

All of the above test requirements shall be fulfilled in order for the observed PSCell addition delay and PSCell release delay to be counted as correct. The rate of correct observed PSCell addition delay and PSCell release delay during repeated tests shall be at least 90%.

NOTE: The PSCell addition delay can be expressed as follows as specified in Clause 7.14.2:

$$T_{config_PSCell} = 15ms + T_{activation_time} + 50ms + T_{PCell_DU} + T_{PSCell_DU}$$

Where:

Tactivation_time = 20 ms (cell2 is known to the UE);

 $T_{PCell_DU} = 0$ (due to PRACH configurations in cell1 and cell2 being orthogonal in time, i.e. non-overlapping in time);

 $T_{PSCell\ DU} = 30 \text{ ms}$ (delay due to PRACH transmission to cell2).

This gives a total of 115 ms.

A.8.24 Proximity-based Services

A.8.24.1 E-UTRAN FDD - Initiation/Cease of SLSS Transmission with ProSe Direct Discovery

The purpose of this test is to verify the requirements related to the maximum evaluation time allowed to initiate and cease SLSS transmissions defined in clause 8.10.2.1. In the test the UE under test is configured for ProSe operation only on PCell and also the UE is configured only for PCell for WAN. This test is applicable for a UE capable of ProSe Direct Discovery and also SLSS transmission and reception (indicated using *disc-SLSS*).

For this test, the UE is triggered by the test loop function or the upper layers to announce ProSe Direct Discovery.

The test parameters are given in Table A.8.24.1.1-1. Table A.8.24.1.1-2 and Table A.8.24.1.1-3 below. There is one active cell (PCell) in this test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. During T1, the RSRP of the PCell is above *syncTxThreshIC* and the UE is not expected to be transmitting SLSS. During T2, the RSRP of the PCell is lowered below *syncTxThreshIC* and the UE is expected to initiate SLSS transmissions. During T3, the RSRP of the PCell is increased back to be above *syncTxThreshIC* and the UE is expected to cease SLSS transmissions.

A.8.24.1.1 Test Purpose and Environment

Table A.8.24.1.1-1: Test parameters for initiation/cease of SLSS transmissions test for E-UTRAN FDD

Parameter	Unit	Value	Comment
E-UTRA RF Channel Number		1	Only one FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	5	
Active cell		Cell 1	E-UTRA FDD Cell1 on RF channel number 1
CP length of Cell 1		Normal	
Layer 3 filtering		Disabled	L3 filtering is not used
drx-Configuration		DRX_P1	As specified in Table A.3.12.2-1
T1	S	3	
T2	S	5.24	
T3	S	5.24	

Table A.8.24.1.1-2: ProSe Direct Discovery configuration for initiation/cease of SLSS transmissions test for E-UTRAN FDD

Parameter	Unit	Value	Comment
E-UTRA RF Channel Number		1	UL carrier frequency
Channel Bandwidth (BW _{channel})	MHz	5	
ProSe Direct Discovery resource pool configuration		As specified in Table A.3.12.4-1 (Configuration #1)	IE values unless specified otherwise in this test.
networkControlledSyncTx		Not configured	
syncTxThreshIC	dBm/15 kHz	-95	In SIB19

Table A.8.24.1.1-3: Cell specific test parameters for initiation/cease of SLSS transmissions test for E-**UTRAN FDD**

Parameter	Unit	Cell 1				
Parameter	Unit	T1	T2	T3		
E-UTRA RF Channel Number	1					
BW _{channel}	MHz		5			
OCNG Pattern (defined in clause A.3.2)			OP.16 FDD			
PBCH_RA						
PBCH_RB						
PSS_RA						
SSS_RA						
PCFICH_RB						
PHICH_RA						
PHICH_RB	dB	0				
PDCCH_RA						
PDCCH_RB						
PDSCH_RA						
PDSCH_RB						
OCNG_RA ^{Note 1}						
OCNG_RB ^{Note 1}						
$N_{oc}^{$	dBm/15 kHz	-95				
\hat{E}_s/N_{oc}	dB	4.5	-4.5	4.5		
RSRP Note3	dBm/15 kHz	-90.5	-99.5	-90.5		
SCH_RP Note 3	dBm/15 kHz	-90.5	-99.5	-90.5		
Propagation Condition			AWGN			
Note 1: OCNG shall be used such that cell	is fully allocated and a c	onstant total tra	ansmitted power	spectral		

density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.24.1.2 **Test Requirements**

The SLSS transmission initiation delay is defined as the time from the beginning of time period T2 up to the moment when the UE initiates the SLSS transmission.

The SLSS transmission initiation delay shall be less than 2.24 s.

The SLSS transmission cease delay is defined as the time from the beginning of time period T3 up to the moment when the UE ceases the SLSS transmission.

The SLSS transmission cease delay shall be less than 2.24 s.

The rate of correct initiation/cease delay of SLSS transmissions observed during repeated tests shall be at least 90%.

NOTE: The initiation/cease delay of SLSS transmissions can be expressed as: T_{evaluate,SLSS} + *discPeriod*,

Where:

 $T_{\text{evaluate,SLSS}}$ is the evaluation time for initiate/cease of SLSS, and is 1.92 sec (see Table 8.10.2.1-1 in

clause 8.10.2.1) for the parameters in this test;

discPeriod is the discovery period (set as 320ms in this test).

A.8.24.2 E-UTRAN TDD - Initiation/Cease of SLSS Transmission with ProSe Direct Discovery

The purpose of this test is to verify the requirements related to the maximum evaluation time allowed to initiate and cease SLSS transmissions defined in clause 8.10.2.1. In the test the UE under test is configured for ProSe operation only on PCell and also the UE is configured only for PCell for WAN. This test is applicable for a UE capable of ProSe Direct Discovery and also SLSS transmission and reception (indicated using *disc-SLSS*).

For this test, the UE is triggered by the test loop function or the upper layers to announce ProSe Direct Discovery.

The test parameters are given in Table A.8.24.2.1-1. Table A.8.24.2.1-2 and Table A.8.24.2.1-3 below. There is one active cell (PCell) in this test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. During T1, the RSRP of the PCell is above *syncTxThreshIC* and the UE is not expected to be transmitting SLSS. During T2, the RSRP of the PCell is lowered below *syncTxThreshIC* and the UE is expected to initiate SLSS transmissions. During T3, the RSRP of the PCell is increased back to be above *syncTxThreshIC* and the UE is expected to cease SLSS transmissions.

A.8.24.2.1 Test Purpose and Environment

Table A.8.24.2.1-1: Test parameters for initiation/cease of SLSS transmissions test for E-UTRAN TDD

Parameter	Unit	Value	Comment
E-UTRA RF Channel Number		1	Only one TDD carrier
E-OTRA RE Channel Number		ļ	frequency is used.
Channel Bandwidth (BW _{channel})	MHz	5	
Active cell		Cell 1	E-UTRA TDD Cell1 on RF
Active cell		Cell I	channel number 1
Uplink/Downlink Configuration		Config 0	
Special Subframe Configuration		6	
CP length of Cell 1		Normal	
Layer 3 filtering		Disabled	L3 filtering is not used
drx-Configuration		DRX P1	As specified in Table
		ם וועבורים	A.3.12.2-1
T1	S	3	
T2	S	5.24	
T3	S	5.24	

Table A.8.24.1.1-2: ProSe Direct Discovery configuration for initiation/cease of SLSS transmissions test for E-UTRAN TDD

Parameter	Unit	Value	Comment
E-UTRA RF Channel Number		1	
Channel Bandwidth (BW _{channel})	MHz	5	
ProSe Direct Discovery resource pool		As specified in Table	IE values unless specified
configuration		A.3.12.4-3	otherwise in this test.
		(Configuration #3)	
networkControlledSyncTx		Not configured	
syncTxThreshIC	dBm/15 kHz	-95	In SIB19

Table A.8.24.2.1-3: Cell specific test parameters for initiation/cease of SLSS transmissions test for E-UTRAN TDD

Parameter	l lmit	Cell 1			
Parameter	Unit	T1	T2	T3	
E-UTRA RF Channel Number			1		
BW _{channel}	MHz		5		
OCNG Pattern (defined in clause A.3.2)			OP.10 TDD		
PBCH_RA					
PBCH_RB					
PSS_RA					
SSS_RA					
PCFICH_RB					
PHICH_RA					
PHICH_RB	dB		0		
PDCCH_RA					
PDCCH_RB					
PDSCH_RA					
PDSCH_RB					
OCNG_RA ^{Note 1}					
OCNG_RB ^{Note 1}					
$N_{oc}^{$	dBm/15 kHz		-95		
\hat{E}_s/N_{oc}	dB	4.5	-4.5	4.5	
RSRP Note3	dBm/15 kHz	-90.5	-99.5	-90.5	
SCH_RP Note 3	dBm/15 kHz	-90.5	-99.5	-90.5	
Propagation Condition			AWGN		

Note 1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.8.24.2.2 Test Requirements

The SLSS transmission initiation delay is defined as the time from the beginning of time period T2 up to the moment when the UE initiates the SLSS transmission.

The SLSS transmission initiation delay shall be less than 2.24 s.

The SLSS transmission cease delay is defined as the time from the beginning of time period T3 up to the moment when the UE ceases the SLSS transmission.

The SLSS transmission cease delay shall be less than 2.24 s.

The rate of correct initiation/cease delay of SLSS transmissions observed during repeated tests shall be at least 90%.

NOTE: The initiation/cease delay of SLSS transmissions can be expressed as: T_{evaluate,SLSS} + *discPeriod*,

Where:

 $T_{\text{evaluate,SLSS}}$ is the evaluation time for initiate/cease of SLSS, and is 1.92 sec (see Table 8.10.2.1-1 in clause 8.10.2.1) for the parameters in this test;

discPeriod is the discovery period (set as 320ms in this test).

A.8.24.3 E-UTRAN FDD - Initiation/Cease of SLSS Transmission with ProSe Direct Communication

The purpose of this test is to verify that the ProSe UE meets the requirements related to the maximum evaluation time allowed to initiate and cease SLSS transmissions defined in clause 8.10.2.2. This test is applicable for a UE capable of ProSe Direct CommunicationIn the test the UE under test is configured for ProSe operation only on PCell and also the UE is configured only for PCell for WAN.

For this test, the UE is triggered by the test loop function or the upper layers to transmit for ProSe Direct Communication.

The test parameters are given in Table A.8.24.3.1-1, Table A.8.24.3.1-2 and Table A.8.24.3.1-3 below. There is one active cell (PCell) in this test. The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. During T1, the RSRP of the PCell is above *syncTxThreshIC* and the UE is not expected to be transmitting SLSS. During T2, the RSRP of the PCell is lowered below *syncTxThreshIC* and the UE is expected to initiate SLSS transmissions. During T3, the RSRP of the PCell is increased back to be above *syncTxThreshIC* and the UE is expected to cease SLSS transmissions.

A.8.24.3.1 Test Purpose and Environment

Table A.8.24.3.1-1: Test parameters for initiation/cease of SLSS transmissions test for E-UTRAN FDD

Parameter	Unit	Value	Comment
E-UTRA RF Channel Number		1	Only one FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	5 or 10	According to principle defined in clause A.3.12.3
Active cell		Cell 1	E-UTRA FDD Cell1 on RF channel number 1
CP length of Cell 1		Normal	
Layer 3 filtering		Disabled	L3 filtering is not used
drx-Configuration		DRX_P1	As specified in Table A.3.12.2-1
T1	S	3	
T2	S	5.24	
T3	S	5.24	

Table A.8.24.3.1-2: ProSe Direct Communication configuration for initiation/cease of SLSS transmissions test for E-UTRAN FDD

Parameter	Unit	Value	Comment
E-UTRA RF Channel Number		1	UL carrier frequency
Channel Bandwidth (BW _{channel})	MHz	5 or 10	According to principle
Chariner Baridwidth (BVV channel)	IVII IZ	3 01 10	defined in clause A.3.12.3
ProSe Direct Communication configuration		As specified in Table	IE values unless specified
		A.3.12.5-1	otherwise in this test.
		(Configuration #1)	
networkControlledSyncTx		Not configured	
syncTxThreshIC	dBm/15 kHz	-95	In SIB18

Table A.8.24.3.1-3: Cell specific test parameters for initiation/cease of SLSS transmissions test for E-**UTRAN FDD**

Parameter	Unit	Cell 1				
	Onit	T1	T2	Т3		
E-UTRA RF Channel Number			1			
BW _{channel} Note 4	MHz		5 or 10			
OCNG Patterns defined in A.3.2.1.2 Note 4		5MHz: OP.16 FDD 10 MHz: OP.2 FDD				
PBCH_RA						
PBCH_RB						
PSS_RA						
SSS_RA						
PCFICH_RB						
PHICH_RA						
PHICH_RB	dB	0				
PDCCH_RA						
PDCCH_RB						
PDSCH_RA						
PDSCH_RB						
OCNG_RA ^{Note 1}						
OCNG_RB ^{Note 1}						
$N_{_{OC}}$ Note2	dBm/15 kHz	-95				
\hat{E}_s/N_{oc}	dB	4.5	-4.5	4.5		
RSRP Note3	dBm/15 kHz	-90.5	-99.5	-90.5		
SCH_RP Note 3	dBm/15 kHz	-90.5	-99.5	-90.5		
Propagation Condition			AWGN	•		

- density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.
- Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
- This test is according to the principle defined in section A.3.12.3. Note 4:

A.8.24.3.2 **Test Requirements**

The SLSS transmission initiation delay is defined as the time from the beginning of time period T2 up to the moment when the UE initiates the SLSS transmission.

The SLSS transmission initiation delay shall be less than 1.96 s.

The SLSS transmission cease delay is defined as the time from the beginning of time period T3 up to the moment when the UE ceases the SLSS transmission.

The SLSS transmission cease delay shall be less than 1.96 s.

The rate of correct initiation/cease delay of SLSS transmissions observed during repeated tests shall be at least 90%.

The initiation/cease delay of SLSS transmissions can be expressed as: T_{evaluate,SLSS} + SLSS period, NOTE:

Where:

is the evaluation time for initiate/cease of SLSS, and is 1.92 sec (see Table 8.10.2.1-1 in T_{evaluate,SLSS}

clause 8.10.2.1) for the parameters in this test;

SLSS period is set to 40ms.

A.9 Measurement Performance Requirements

Unless explicitly stated otherwise:

- Reported measurements shall be within defined range of accuracy limits defined in Clause 9 for at least 90 % of the reported cases. If multiple measurement performance requirements are verified in the same test, the reported measurements for each requirement shall be within defined range of accuracy limits of the corresponding requirement defined in Clause 9 for at least 90% of the reported cases.
- Cell 1 is the PCell.
- Measurements are performed in RRC_CONNECTED state.
- The reference channels assume transmission of PDSCH with a maximum number of 5 HARQ transmissions unless otherwise specified.

A.9.1 RSRP

A.9.1.1 FDD Intra frequency case

A.9.1.1.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.2.1 and 9.1.2.2 for FDD intra frequency measurements.

A.9.1.1.2 Test parameters

In this set of test cases all cells are on the same carrier frequency. Both absolute and relative accuracy of RSRP intra frequency measurements are tested by using the parameters in Table A.9.1.1.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell.

Table A.9.1.1.2-1: RSRP FDD Intra frequency test parameters

D.	aramatar.	Unit	Tes	st 1	Tes	st 2	Tes	st 3
	arameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
	nannel Number	N 41 1	,			1	,	•
BW _{channel}		MHz		0		0		0
Measurement		$n_{\it PRB}$		–27		–27		–27
	ence measurement		R.0	-	R.0	-	R.0	-
channel define			FDD		FDD		FDD	
PDSCH allocat		n_{PRB}	13—36	-	13—36	-	13—36	-
	CH/PHICH Reference channel defined in		P.6	FDD	R.6	EDD	P.6	FDD
A.3.1.2.1	channer denned in		17.0	רטט	1.0	ГОО	1.0	רטט
OCNG Pattern	s defined in A.3.2.1.1		OP.1	OP.2	OP.1	OP.2	OP.1	OP.2
	nd A.3.2.1.2 (OP.2		FDD	FDD	FDD	FDD	FDD	FDD
FDD) PBCH_RA								
PBCH_RB								
PSS_RA								
SSS_RA								
PCFICH_RB								
PHICH_RA								
PHICH_RB		dB	0	0	0	0	0	0
PDCCH_RA PDCCH_RB								
PDSCH_RA								
PDSCH_RB								
OCNG_RA ^{Note}								
OCNG_RB ^{Note}								
	Bands FDD_A						-116	
	Bands FDD_B							
$N_{oc}^{ m Note2}$	Bands FDD_C Bands FDD_D							
¹ V oc	Bands FDD F	dBm/15 kHz	-106	-106	-88	-88	-1 -11 -1 -11	
	FDD_F Note 5						-1	14
	Bands FDD_G Note 7						-1	
	Bands FDD_H						-11	2.5
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	2.5	-6	2.5	-6	0.46	-5.76
	Bands FDD_A						-113	-117
	Bands FDD_B						-112.5	-116.5
	Bands FDD_C						-112	-116
RSRP ^{Note3}	Bands FDD_D Bands FDD_E,	dBm/15 kHz	-100	-105	-82	-87	-111.5	-115.5
	FDD_F Note 5						-111	-115
	Bands FDD_G Note 7						-110	-114
	Bands FDD_H						-109.5	-113.5
	Bands FDD_A							.43
	Bands FDD_B							.93
	Bands FDD_C							.43
Io ^{Note3}	Bands FDD_D Bands FDD F.	dBm/9 MHz	-70.27	-70.27	-52.27	-52.27		.93
	Bands FDD_E, FDD_F Note 5						-80	.43
	Bands FDD_G Note 7							.43
	Bands FDD_H						-78	.93
\hat{E}_s/N_{oc}		dB	6	1	6	1	3	-1
Propagation co	ondition	-	AW	GN	AW	GN	AW	GN

Note 1:	OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
Note 2:	Interference from other cells and noise sources not specified in the test is assumed to be constant over
	subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
Note 3:	RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
Note 4:	RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
Note 5:	For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.
Note 6:	E-UTRA operating band groups are as defined in Section 3.5.
Note 7:	Except Band 29 and Band 32.

A.9.1.1.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in sections 9.1.2.1 and 9.1.2.2.

A.9.1.2 TDD Intra frequency case

A.9.1.2.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.2.1 and 9.1.2.2 for TDD intra frequency measurements.

A.9.1.2.2 Test parameters

In this set of test cases all cells are on the same carrier frequency. Both absolute and relative accuracy of RSRP intra frequency measurements are tested by using the parameters in Table A.9.1.2.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell.

Table A.9.1.2.2-1: RSRP TDD Intra frequency test parameters

Dox	am of a r	l lni4	Tes	st 1	Tes	st 2	Tes	st 3	
	rameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2	
E-UTRA RF Ch	annel Number		,			1		1	
BW _{channel}		MHz	1	0	10		10		
Special subfran	ne			3		6		6	
configurationNot	e i								
Uplink/downlink configuration Note1			,	1	,	1	,	1	
Measurement b	andwidth	n_{PRB}	22-	–27	22-	–27	22-	–27	
PDSCH Refere	nce measurement		R.0	_	R.0	_	R.0	_	
channel defined	d in A.3.1.1.2		TDD		TDD		TDD		
PDSCH allocati	ion	n_{PRB}	13—36	-	13—36	-	13—36	-	
PDCCH/PCFIC	H/PHICH								
Reference mea	surement channel		R.6	TDD	R.6	TDD	R.6	TDD	
defined in A.3.1									
OCNG Patterns			OP.1	OP.2	OP.1	OP.2	OP.1	OP.2	
A.3.2.2.1 (OP.1			TDD	TDD	TDD	TDD	TDD	TDD	
A.3.2.2.2 (OP.2	? TDD)								
PBCH_RA									
PBCH_RB		-							
PSS_RA									
SSS_RA		-							
PCFICH_RB		-							
PHICH_RA PHICH_RB		- JD	0	_	_	_	_	_	
PDCCH_RA		dB	0	0	0	0	0	0	
PDCCH_RB		-							
PDSCH_RA		-							
PDSCH_RB		-							
OCNG_RA ^{Note2}									
OCNG RB ^{Note2}		1							
	Bands TDD_A						-1	16	
$N_{oc}^{ m Note3}$	Bands TDD_C	dBm/15 kHz	-106	-106	-88	-88		15	
	Bands TDD E							14	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	2.5	-6	2.5	-6	0.5	-5.76	
-s/-ot	Bands TDD_A	-		_		_	-113	-117	
RSRP ^{Note4}	Bands TDD_C	dBm/15 kHz	-100	-105	-82	-87	-112	-116	
T COT CI	Bands TDD_E	dBitty to Kitiz	100	100	02	0,	-111	-115	
	Bands TDD_E Bands TDD_A				2.43				
Io ^{Note4}	Bands TDD_C	dBm/9 MHz	-70.27	-70.27	-52.27	-52.27	-81	.43	
	Bands TDD_E						-80	.43	
\hat{E}_s/N_{oc}		dB	6	1	6	1	3	-1	
	ndition	-	AW	-	_	GN	_	GN	
Propagation co	nunun	-	I AVV	GN	AVV	GIN	AVV	GN	

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over

subcarriers and time and shall be modelled as AWGN of appropriate power for $^{N_{oc}}$ to be fulfilled.

Note 4: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: RSRP minimum requirements are specified assuming independent interference and noise at each

receiver antenna port.

Note 6: E-UTRA operating band groups are as defined in Section 3.5.

A.9.1.2.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in sections 9.1.2.1 and 9.1.2.2.

A.9.1.3 FDD—FDD Inter frequency case

A.9.1.3.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.3.1 and 9.1.3.2 for FDD—FDD inter frequency measurements.

A.9.1.3.2 Test parameters

In this set of test cases the cells are on different carrier frequencies. Both absolute and relative accuracy of RSRP interfrequency measurements are tested by using the parameters in Table A.9.1.3.2-1 In all test cases, Cell 1 is the PCell and Cell 2 the target cell. The inter frequency measurements are supported by a measurement gap.

Table A.9.1.3.2-1: RSRP FDD—FDD Inter frequency test parameters

Par	ameter	Unit	Tes		Tes	
		J	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF Ch	annel Number	MHz	10	2	10	2 10
BW _{channel} Gap Pattern Id		IVITIZ	0	10	10	-
Measurement b	pandwidth	n_{PRB}		–27	22-	_27
PDSCH Refere	nce measurement d in A.3.1.1.1	TRD	R.0 FDD	-	R.0 FDD	-
PDSCH allocation		$n_{\scriptscriptstyle PRB}$	13—36	-	13—36	-
defined in A.3.1	surement channel .2.1		R.6	FDD	R.6	FDD
OCNG Patterns A.3.2.1.1 (OP.1 A.3.2.1.2 (OP.2	FDD) and		OP.1 FDD	OP.2 FDD	OP.1 FDD	OP.2 FDD
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RB OCNG_RANote	9	dB	0	0	0	0
$N_{oc}^{$	Bands FDD_A Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 5 Bands FDD_G Note 7 Bands FDD_H	dBm/15 kHz	-88.65	-88.65	$(N_{oc} \\ \text{for} \\ \text{Channel} \\ 2 + 8 \text{dB})$	-117 -116.5 -116 -115.5 -115 -114 -113.5
\hat{E}_{s}/I_{ot}		dB	10	10	13	-4
RSRP ^{Note3}	Bands FDD_A Bands FDD_B Bands FDD_D Bands FDD_E, FDD_F Note 5 Bands FDD_G Note 7 Bands FDD_H	dBm/15 kHz	-78.65	-78.65	(RSRP for Cell 2 +25dB)	-121 -120.5 -120 -119.5 -119 -118
i contract of the contract of	I DONG EDD A	1	1			-87.76
Io ^{Note3}	Bands FDD_A Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 5 Bands FDD_G Note 7 Bands FDD_H	dBm/9 MHz	-50.45	-50.45	(lo for Channel 2 +19.75d B)	-87.26 -86.76 -86.26 -85.76 -84.76
lo ^{Note3} \hat{E}_s/N_{oc}	Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 5 Bands FDD_G Note 7	dBm/9 MHz dB	-50.45 10	-50.45 10	Channel 2 +19.75d	-86.76 -86.26 -85.76 -84.76

OCNG shall be used such that both cells are fully allocated and a constant total Note 1: transmitted power spectral density is achieved for all OFDM symbols.

Interference from other cells and noise sources not specified in the test is assumed

Note 2:

	to be constant over subcarriers and time and shall be modelled as AWGN of
	appropriate power for N_{oc} to be fulfilled.
Note 3:	RSRP and lo levels have been derived from other parameters for information
	purposes. They are not settable parameters themselves.
Note 4:	RSRP minimum requirements are specified assuming independent interference and
	noise at each receiver antenna port.
Note 5:	For Band 26, the tests shall be performed with the carrier frequency of assigned E-
	UTRA channel bandwidth within 865-894 MHz.
Note 6:	E-UTRA operating band groups are as defined in Section 3.5.
Note 7:	Except Band 29 and Band 32.

A.9.1.3.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in sections 9.1.3.1 and 9.1.3.2.

A.9.1.4 TDD—TDD Inter frequency case

A.9.1.4.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.3.1 and 9.1.3.2 for TDD—TDD inter frequency measurements.

A.9.1.4.2 Test parameters

In this set of test cases the cells are on different carrier frequencies. Both absolute and relative accuracy of RSRP interfrequency measurements are tested by using the parameters in Table A.9.1.4.2-1 for TDD configuration 1 and in Table A.9.1.4.2-2 for TDD configuration 0. In all test cases, Cell 1 is the PCell and Cell 2 the target cell. The inter frequency measurements are supported by a measurement gap.

Table A.9.1.4.2-1: RSRP TDD—TDD Inter frequency test parameters for TDD configuration 1

Dor	omotor	l lmit	Tes	st 1	Tes	st 2
	ameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2
	Channel Number		1	2	1	2
B\	V _{channel}	MHz	10	10	10	10
Special subfran	ne configuration Note1		(3	·	<u> </u>
	k configuration Note1		· · · · · ·	1		
Gap	Pattern Id		0	-	0	-
Measurem	ent bandwidth	$n_{\it PRB}$	22-	–27	22-	–27
	ence measurement ined in A.3.1.1.2		R.0 TDD	-	R.0 TDD	-
PDSC	H allocation	$n_{\scriptscriptstyle PRB}$	13—36	-	13—36	-
measurement	H/PHICH Reference channel defined in 3.1.2.2		R.6	TDD	R.6	TDD
	defined in A.3.2.2.1 A.3.2.2.2 (OP.2 TDD)		OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD
	CH_RA		100	100	וטטו	וטט
	CH RB					
PS	SS_RA					
	SS_RA]				
	ICH_RB					
	CH_RA					
	CH_RB CCH_RA	dB	0	0	0	0
	CH_RB					
	SCH_RA					
	SCH_RB					
OCN	G RA ^{Note2}					
OCN	G_RB ^{Note2}					
	Bands TDD_A				(N_{oc})	-117
$N_{oc}^{$	Bands TDD_C	dBm/15 kHz	-88.65	-88.65	for	-116
	Bands TDD_E				Channel 2 +8dB)	-115
Ê	$I_{ m ot}/I_{ m ot}$	dB	10	10	13	-4
	Bands TDD_A				(RSRP	-121
RSRP ^{Note4}	Bands TDD_C	dBm/15 kHz	-78.65	-78.65	for Cell 2	-120
	Bands TDD_E				+25dB)	-119
	Bands TDD_A				(lo for Channel	-87.76
lo ^{Note4}	Bands TDD_C	dBm/9 MHz	-50.45	-50.45	2	-86.76
	Bands TDD_E				+19.75d B)	-85.76
\hat{E}_s	$/N_{oc}$	dB	10	10	13	-4
Propaga	tion condition	=		GN	AW	
Note 1: For a	pooial aubframe and	بامنامير ماميرها	antiauratia	na aaa Ta	hlaa 1 2 1	opd 4 0

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of

appropriate power for $N_{\it oc}$ to be fulfilled.

Note 4: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

Note 6: E-UTRA operating band groups are as defined in Section 3.5.

Table A.9.1.4.2-2: RSRP TDD—TDD Inter frequency test parameters for TDD configuration 0

E-UTRA RF Channel Number	Dor	omotor	l lmi4	Tes	st 1	Tes	st 2
BW Department Special subframe configuration Notest 0 0 0 0 0 0 0 0 0			Unit	Cell 1	Cell 2	Cell 1	Cell 2
Special subframe configuration Special subframe configuration	E-UTRA RF	Channel Number		1	2	1	2
Uplink-downlink configuration Notes O	B\	V _{channel}	MHz			10	10
Gap Pattern Id	Special subfrar	ne configuration Note1		(6	(6
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$				()	<u> </u>)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Gap	Pattern Id		0	-	0	-
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Measurem	ent bandwidth	$n_{\scriptscriptstyle PRB}$	22-	–27	22-	–27
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.2 OCNG Patterns defined in A.3.2.2.1 OP.1 OP.2 OP.1 OP.3 OP.					-	_	-
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.2 OCNG Patterns defined in A.3.2.2.1 (OP.1 TDD) and A.3.2.2.2 (OP.2 TDD)	PDSCI	- allocation	n_{PRB}	13—36	-	13—36	-
COP.1 TDD and A.3.2.2.2 (OP.2 TDD)	measurement	channel defined in		R.6	TDD	R.6	TDD
PBCH_RA				_	-	-	OP.2
PBCH_RB	_ `	• • • • • • • • • • • • • • • • • • • •		100	100	וטט	וטטו
SSS_RA							
PCFICH_RB	PS	SS_RA					
PHICH_RA							
PHICH_RB							
PDCCH_RA					_	_	_
PDCCH_RB			dB	0	0	0	0
PDSCH_RA		_					
PDSCH_RB		_					
OCNG_RANote2 OCNG_RBNote2 Bands TDD_A Bands TDD_C dBm/15 kHz -88.65 -88.65 for Channel 2 +8dB) -116 Es/Iot dB 10 10 13 -4 Bands TDD_A Bands TDD_C dBm/15 kHz -78.65 -78.65 (RSRP for Cell 2 +25dB) -120 Bands TDD_E Bands TDD_A (Io for Channel 2 +25dB) -118 -87.7 Bands TDD_C dBm/9 MHz -50.45 -50.45 -50.45 -85.7 Bands TDD_E Bands TDD_E -85.7 -85.7 -85.7	PDS	SCH_RB					
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	OCN	G RA ^{Note2}					
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	OCN	G_RB ^{Note2}					
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		Bands TDD_A				(N_{oc})	-117
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	$N_{oc}^{ m Note3}$	Bands TDD_C	dBm/15 kHz	-88.65	-88.65	0 0 22— R.5 TDD 13—36 R.6 T TDD 0 0 (N _{oc} for Channel 2 +8dB) 13 (RSRP for Cell 2 +25dB) (lo for Channel 2 +19.75d B)	-116
RSRPNote4 Bands TDD_A Bands TDD_C dBm/15 kHz -78.65 -78.65 (RSRP for Cell 2 -120		Bands TDD_E					-115
RSRPNote4 Bands TDD_A Bands TDD_C dBm/15 kHz -78.65 -78.65 (RSRP for Cell 2 -120	Ê	$I_{ m ot}/I_{ m ot}$	dB	10	10	13	-4
Bands TDD_C Bands TDD_C Bands TDD_E Bands TDD_A Bands TDD_C Bands TDD_C Bands TDD_C Bands TDD_E						,	-121
Bands TDD_A Bands TDD_C Bands TDD_E Bands TDD_E Construction Constr	RSRP ^{Note4}	Bands TDD_C	dBm/15 kHz	-78.65	-78.65		-120
Io ^{Note4} Bands TDD_C dBm/9 MHz -50.45 -50.45 Channel 2 -86.7 -85.7 -85.7		Bands TDD_E					-119
Bands TDD_C dBm/9 MHz -50.45 -50.45 2 -86.7		Bands TDD_A					-87.76
Bands IDD_E B) -85.7	Io ^{Note4}	Bands TDD_C	dBm/9 MHz	-50.45	-50.45	2	-86.76
							-85.76
\hat{E}_s/N_{oc} dB 10 10 13 -4			dB	-	_	_	
Propagation condition - AWGN AWGN			-				

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of

appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

Note 6: E-UTRA operating band groups are as defined in Section 3.5.

A.9.1.4.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in sections 9.1.3.1 and 9.1.3.2.

A.9.1.5 FDD—TDD Inter frequency case

A.9.1.5.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.3.1 and 9.1.3.2 for FDD—TDD inter frequency measurements.

A.9.1.5.2 Test parameters

In this set of test cases the cells are on different carrier frequencies. Both absolute and relative accuracy of RSRP inter frequency measurements are tested by using the parameters in Table A.9.1.5.2-1 and Table A.9.1.5.2-2. In all test cases, Cell 1 is the serving cell and Cell 2 the target cell. Cell 1 is FDD cell and Cell 2 is TDD cell. The inter frequency measurements are supported by a measurement gap.

Table A.9.1.5.2-1: RSRP FDD—TDD Inter frequency test parameters (FDD Cell1)

Parameter	Unit	_	st 1		st 2				
E-UTRA RF Channel Number		Cell 1		1					
BW _{channel}	MHz		0		0				
Gap Pattern Id	IVII IZ)		0				
		,							
Measurement bandwidth	n_{PRB}	22-	-27	22-	-27				
PDSCH Reference measurement channel defined in A.3.1.1.1		R.0	FDD	R.0	FDD				
PDSCH allocation	n_{PRB}	13-	– 36	13-	– 36				
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.1		R.6	FDD	R.6	FDD				
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD) and A.3.2.1.2 (OP.2 FDD)		OP.1	FDD	OP.1	FDD				
PBCH_RA									
PBCH_RB									
PSS_RA									
SSS_RA									
PCFICH_RB									
PHICH_RA									
PHICH_RB	dB	0	0	0	0				
PDCCH_RA									
PDCCH_RB									
PDSCH_RA									
PDSCH_RB									
OCNG_RANote1									
OCNG_RBNote									
$N_{oc}^{ m Note2}$	dBm/15 kHz	-88	3.65	-1	04				
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	dB	-	0		3				
RSRP ^{Note3}	dBm/15 kHz	-78	3.65	-(91				
lo ^{Note3}	dBm/9 MHz	-50	.45	-63	3.01				
\hat{E}_s/N_{oc}	dB	1	0	1	3				
Propagation condition	-	AW	'GN	AW	/GN				
Note 1: OCNG shall be used suc									

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of

appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

Table A.9.1.5.2-2: RSRP FDD—TDD Inter frequency test parameters (TDD cell2)

Parameter	Unit	Test 1 Cell 2	Test 2 Cell 2			
E-UTRA RF Channel Number		2	2			
BW _{channel}	MHz	10	10			
Special subframe	IVII IZ					
configuration Note1		6	6			
Uplink-downlink configuration Note1		1	1			
Gap Pattern Id		-	-			
Measurement bandwidth	n_{PRB}	22—27	22—27			
PDSCH Reference measurement channel defined in A.3.1.1.2		-	-			
PDSCH allocation	$n_{{\scriptscriptstyle PRB}}$	-	-			
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.2		R.6 TDD	R.6 TDD			
OCNG Patterns defined in A.3.2.2.1 (OP.1 TDD) and A.3.2.2.2 (OP.2 TDD)		OP.2 TDD	OP.2 TDD			
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RA OCNG_RB OCNG_RB Note2	dB	0	0			
$N_{oc}^{ m Note3}$	dBm/15 kHz	-88.65	-112			
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	10	-4			
RSRP ^{Note4}	dBm/15 kHz	-78.65	-116			
Io ^{Note4}	dBm/9 MHz	-50.45	-82.76			
\hat{E}_s/N_{oc}	dB	10	-4			
Propagation condition	_	AWGN	AWGN			
Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211. Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.						

Interference from other cells and noise sources not specified in the test is assumed Note 3: to be constant over subcarriers and time and shall be modelled as AWGN of

appropriate power for $\frac{N_{oc}}{N_{oc}}$ to be fulfilled. RSRP and lo levels have been derived from other parameters for information Note 4: purposes. They are not settable parameters themselves.

Note 5: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

A.9.1.5.3 **Test Requirements**

The RSRP measurement accuracy shall fulfil the requirements in sections 9.1.3.1 and 9.1.3.2.

A.9.1.6 FDD RSRP for E-UTRAN Carrier Aggregation

A.9.1.6.1 Test Purpose and Environment

The purpose of this test is to verify that the FDD RSRP absolute and relative accuracy requirements in carrier aggregation are within the specified limits. This test will verify the absolute RSRP accuracy requirements of the primary component carrier defined in clause 9.1.11.1, the absolute RSRP accuracy requirements of the secondary component carrier defined in clause 9.1.11.2, and the relative RSRP accuracy requirements of the secondary component carrier defined in clause 9.1.11.2. The test will also verify the primary and secondary component carrier relative RSRP accuracy requirement defined in Clause 9.1.11.3.

A.9.1.6.2 Test parameters

In this set of cases cell1 is PCell on the primary component carrier, cell2 is SCell on the secondary component carrier and activated, and cell3 is the neighboring cell on the secondary component carrier. The test parameters are given in Table A.9.1.6.2-1.

Table A.9.1.6.2-1: RSRP FDD carrier aggregation test parameters

Pa	rameter	Unit		Test 1	
		Onit	Cell 1	Cell 2	Cell3
	nannel Number		1	2	2
BW _{channel} Timing offset to		MHz	10	10	10
Time alignment error between cell 2 and cell 1		μѕ	-	0 ≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause	-
Measurement I		n_{PRB}		6.5.3.1. 22—27	
	ence measurement	PRB			
channel define			R.0 FDD	R.0 FDD	-
PDSCH allocat		n_{PRB}	13—36	13—36	-
defined in A.3.	asurement channel 1.2.1			R.6 FDD	
OCNG Pattern A.3.2.1.1 (OP.: A.3.2.1.2 (OP.:	1 FDD) and		OP.1 FDD	OP.1 FDD	OP.2 FDD
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RA PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RANot OCNG_RBNot	e	dB	0	0	0
$N_{oc}^{ m Note2}$	Bands FDD_A Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Bands FDD_G Bands FDD_G Bands FDD_H	dBm/15 kHz	-117 -116.5 -116 -115.5 -115 -114 -113.5	(N_{oc} for Ch	annel 1 +1dB)
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	-4	0.46	-5.76
RSRP ^{Note3}	Bands FDD_A Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Bands FDD_G Bands FDD_G Bands FDD_H	dBm/15 kHz	-121 -120.5 -120 -119.5 -119 -118 -117.5	(RSRP for Cell 1 +8dB)	(RSRP for Cell 1 +4dB)
Io ^{Note3}	Bands FDD_A Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 6 Bands FDD_G Bands FDD_G Bands FDD_H	dBm/9 MHz	-87.76 -87.26 -86.76 -86.26 -85.76 -84.76 -84.26	(lo for Chanr	nel 1 +5.33dB)

\hat{E}_s/N_{oc}		dB	-4 3		-1		
Propagat	ion condition	-		AWGN			
Note 1:	OCNG shall be used such		,		tant total		
	transmitted power spectra	,		,			
Note 2:	Interference from other ce to be constant over subca						
			u shall be mo	delled as Avvi	GIV OI		
	appropriate power for $N_{\scriptscriptstyle o}$	$_{c}$ to be fulfilled.					
Note 3:	RSRP and lo levels have	been derived from other parameters for information					
		ettable parameters themselves.					
Note 4:	RSRP minimum requirem	•	assuming ind	dependent inte	erference and		
	noise at each receiver and	•					
Note 5:	The selection of the band aggregation supported by		nds on the co	nfiguration of t	he carrier		
Note 6:	For Band 26, the tests sha	all be performed with the carrier frequency of the assigned					
E-UTRA channel bandwidth within 865-894 MHz.							
Note 7: This test verifies the RRM requirement which is independent of channel bandwidth					l bandwidth		
1	and is performed according						
Note 8:	E-UTRA operating band of	groups are as defir	ned in Sectior	า 3.5.			

A.9.1.6.3 Test Requirements

In the test, the performance of RSRP measurements is verified from following four perspectives:

- The absolute accuracy of intra-frequency RSRP measurements for Cell 1 on the primary component carrier shall fulfil the requirements defined in clause 9.1.11.1.
- The absolute accuracy of intra-frequency RSRP measurements for Cell 2 on the secondary component carrier shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of intra-frequency RSRP measurements for Cell 3 relative to Cell 2 on the secondary component carrier shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of inter-frequency RSRP measurements between the primary and secondary component carriers for Cell 2 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.11.3.

A.9.1.7 TDD RSRP for E-UTRAN Carrier Aggregation

The test case in this clause are applicable to carrier aggregation capable UEs which have been configured with a downlink Scell.

A.9.1.7.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the absolute RSRP accuracy on PCell defined in clause 9.1.11.1, the absolute RSRP accuracy on Scell defined in clause 9.1.11.2, the relative RSRP accuracy between SCell and Cell 3 defined in clause 9.1.11.2, and the relative RSRP accuracy between PCell and SCell defined in clause 9.1.11.3.

A.9.1.7.2 Test parameters

In this set of test cases there are three cells on two carrier frequencies. Cell 1 is PCell on channel 1, Cell 2 is activated SCell on channel 2, and Cell 3 is neighbour cell which is also on channel 2. The parameters for the test are listed in Table A.9.1.7.2-1.

Table A.9.1.7.2-1: Carrier aggregation RSRP test parameters for TDD

_		11.74		Test 1	
Pa	arameter	Unit	Cell 1	Cell 2	Cell 3
E-UTRA RF Channe	el Number		1	,	2
BW _{channel}		MHz	10		
Special subframe co	onfiguration ^{Note1}			6	
Uplink/downlink con	figuration ^{Note1}			1	
Timing offset to Cel	11	μs	-	0	3
Time alignment erro	or between cell 2 and cell 1		-	≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1	-
Measurement band	width	n_{PRB}		22—27	
PDSCH Reference defined in A.3.1.1.2	measurement channel		R.0 TDD	R.0 TDD	-
PDSCH allocation		n_{PRB}	13—36	13—36	-
PDCCH/PCFICH/PI		110		R.6 TDD	
	nel defined in A.3.1.2.2			11.0 100	
	ined in A.3.2.2.1 (OP.1		OP.1 TDD	OP.1 TDD	OP.2 TDD
TDD) and A.3.2.2.2 PBCH RA	(OP.2 TDD)				
PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RB PDSCH_RA PDSCH_RB OCNG_RA OCNG_RB POCNG_RB		dB	0	0	0
Note2	Bands TDD_A		-117	$(N_{oc}$ for	Channel 1
$N_{oc}^{ m Note3}$	Bands TDD_C	dBm/15 kHz	-116		
	Bands TDD_E		-115	+10	dB)
$\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$		dB	-4	0.5	-5.76
RSRP ^{Note4}	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/15 kHz	-121 -120 -119	(RSRP for Cell 1 +8dB)	(RSRP for Cell 1 +4dB)
Io ^{Note4}	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/9 MHz	-87.76 -86.76 -85.76	(lo for C +5.3	hannel 1 3dB)
\hat{E}_s/N_{oc}		dB	-4	3	-1
Propagation condition		-		AWGN	
Note 1: For spec	ial subframe and uplink-dow	nlink configuration	ons see Table	es 4.2-1 and 4	1.2-2 in TS

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power

for N_{oc} to be fulfilled.

Note 4: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

Note 6: The selection of the bands for testing depends on the configuration of the carrier

	aggregation supported by the UEs.
Note 7:	This test verifies the RRM requirement which is independent of channel bandwidth and is
	performed according to the principle defined in section A.3.6.1.
Note 8:	E-UTRA operating band groups are as defined in Section 3.5.

A.9.1.7.3 Test Requirements

In the test, the performance of RSRP measurements is verified form following four perspectives:

- The absolute accuracy of intra-frequency RSRP measurements for Cell 1 on the primary component carrier shall fulfil the requirements defined in clause 9.1.11.1.
- The absolute accuracy of intra-frequency RSRP measurements for Cell 2 on the secondary component carrier shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of intra-frequency RSRP measurements for Cell 3 relative to Cell 2 on the secondary component carrier shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of inter-frequency RSRP measurements between the primary and secondary component carriers for Cell 2 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.11.3

A.9.1.8 FDD RSRP under Time-Domain Measurement Resource Restriction with Non-MBSFN ABS

A.9.1.8.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.2.3 and 9.1.2.4 for FDD intra-frequency RSRP measurements under timedomain measurement resource restriction with non-MBSFN ABS configured in the aggressor cell.

A.9.1.8.2 Test parameters

In this set of test cases all cells are on the same carrier frequency as PCell. Both absolute and relative accuracy of RSRP intra-frequency measurements are tested, with test parameters specified in Tables A.9.1.8.2-1 and A.9.1.8.2-2.

In the tests there are two synchronous cells, Cell 1 and Cell 2, on the same RF channel. In all test cases, Cell 1 is the serving cell (PCell) and also the aggressor cell to Cell 2. Cell 2 is the cell to be measured for RSRP absolute accuracy, whilst both Cell 1 and Cell 2 are measured for RSRP relative accuracy. Non-MBSFN ABS pattern is configured for Cell 1 during the test. The UE is configured by higher layers via Cell 1 with a time-domain measurement resource restriction pattern for performing E-UTRAN FDD intra-frequency measurements on neighbour cells and provided with a neighbour cell list associated with the pattern, where the cell list includes Cell 2. The UE is also configured with a time-domain measurement resource restriction pattern for the serving cell measurements. The information for both patterns shall be provided to the UE before the measurements start.

Table A.9.1.8.2-1: General test parameters for E-UTRAN FDD RSRP intra frequency test parameters under time-domain measurement resource restriction with non-MBSFN ABS

Parameter	Unit	Value	Comment
Serving cell (PCell)		Cell 1	The aggressor cell to Cell 2
Neighbour cell		Cell 2	Cell to be measured
PCell ABS configuration		Non-MBSFN ABS	As defined in Table A.3.4.1.1-1
CP length		Normal	For both cells in the test
DRX			OFF
Time offset between cells		3 μs	Synchronous cells
Physical cell ID PCI		(PCI _{cell1} - PCI _{cell2})mod6	Cell PCIs for Cell 1 and Cell 2 are selected
		!=0	randomly so that the condition is met
ABS pattern		'10000000100000001000 0000100000001000000	Non-MBSFN ABS. FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 1. The first/leftmost bit corresponds to the subframe #0 of a radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. No MBSFN subframes are cofigured in the ABS subframes in Cell 1.
Time-domain measurement resource restriction pattern for neighbour cell measurements on RF Channel 1 Time-domain measurement		'1000000010000001000 00001000000010000000	Configured for Cell 2 measurements by measSubframePattern-Neigh IE in measSubframePatternConfig-Neigh, as defined in TS 36.331 [2], clause 6.3.5. measSubframeCellList contains Cell 2. Configured for measurements on Cell 1.
resource restriction pattern for serving cell measurements		00000100000001000000	Comingator for moderational on Coll 1.

Table A.9.1.8.2-2: Cell-specific test parameters for E-UTRAN FDD RSRP intra-frequency test parameters under time-domain measurement resource restriction with non-MBSFN ABS

		1124	Tes	st 1	Tes	st 2	Tes	st 3	
	arameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2	
	nannel Number		•		1			1	
BW _{channel}		MHz	10		10		10		
Measurement bandwidth		$n_{\scriptscriptstyle PRB}$	22-	–27	22-	-27	22-	–27	
	ence measurement		R.0	-	R.0	_	R.0	-	
channel define			FDD		FDD		FDD		
PDSCH allocat		n_{PRB}	13—36	-	13—36	-	13—36	-	
	CH/PHICH Reference channel defined in		R.6	FDD	R.6	FDD	R.6	FDD	
OCNG Patterns (OP.5 FDD) an FDD)	s defined in A.3.2.1.5 id A.3.2.1.6 (OP.6		OP.5 FDD	OP.6 FDD	OP.5 FDD	OP.6 FDD	OP.5 FDD	OP.6 FDD	
PBCH_RA									
PBCH_RB									
PCFICH_RB									
PHICH_RA PHICH_RB									
PDCCH_RA		dB	Note 6	0	Note 6	0	Note 6	0	
PDCCH_RB		uБ	Note 0	U	Note 0	0	Note 6	U	
PDSCH_RA									
PDSCH_RB									
OCNG_RA ^{Note1}									
OCNG_RB ^{Note1}									
PSS_RA		dB	-4	0	-4	0	-4	0	
SSS_RA		dB	-4	0	-4	0	-4	0	
	Bands FDD_A					•	-116		
	Bands FDD_B]					-11	5.5	
a z Note 2	Bands FDD_C							-115	
$N_{oc}^{ m Note2}$	Bands FDD_D	dBm/15 kHz	-1	06	-88		-114.5		
	Bands FDD_E, FDD_F Note 7							-114	
	Bands FDD_G Note 9						-113		
	Bands FDD_H						-112.5		
<u> </u>					<u> </u>				
CRS \hat{E}_s / N_{oc}	\	dB	5	-2	5	-4	5	-4	
CRS (\hat{E}_s/I_{ot})	Note 5 meas	dB	2.88	-2	3.54	-4	3.54	-4	
SCH \hat{E}_{s}/I_{ot}		dB	-1.12	-5.54	-0.46	-7.54	-0.46	-7.54	
	Bands FDD_A						-111	-120	
	Bands FDD_B						-110.5	-119.5	
	Bands FDD_C						-110	-119	
RSRP Note3,4,5	Bands FDD_D	dBm/15 kHz	-101	-108	-83	-92	-109.5	-118.5	
	Bands FDD_E, FDD_F Note 7						-109	-118	
	Bands FDD_G Note 9						-108	-117	
	Bands FDD_H						-107.5	-116.5	
	Bands FDD_A						-81.63	-85.37	
	Bands FDD_B						-81.13	-84.87	
	Bands FDD_C						-80.63	-84.37	
$(Io)_{meas}^{Note 3}$	Bands FDD_D	dBm/9 MHz	-71.41	-74.88	-53.63	-57.37	-80.13	-83.87	
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Bands FDD_E, FDD_F Note 7	GDIII, O IVII IZ	, ,,,,,,	7 7.00	-03.03	-51.31	-79.63	-83.37	
	Bands FDD_G Note 9						-78.63	-82.37	
	Bands FDD_H						-78.13	-81.87	
Propagation co	ondition		AW	GN	AW	'GN	AW	'GN	

Note 1:	OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
Note 2:	Interference from other cells and noise sources not specified in the test is assumed to be constant over
	subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
Note 3:	Applies to all subframes. RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io levels are calculated in CRS symbols of measurement restricted subframes.
Note 4:	RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
Note 5:	Applies to restricted measurement subframes of the respective cell.
Note 6:	Non-ABS and ABS subframe channel powers defined in Table A.3.4.1.1-1.
Note 7:	For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.

A.9.1.8.3 Test Requirements

Note 8: Note 9:

The absolute RSRP measurement accuracy and relative RSRP measurement accuracy shall fulfill the requirements in Sections 9.1.2.3 and 9.1.2.4, respectively.

E-UTRA operating band groups are as defined in Section 3.5.

A.9.1.9 TDD RSRP under Time-Domain Measurement Resource Restriction with Non-MBSFN ABS

A.9.1.9.1 Test Purpose and Environment

Except Band 29 and Band 32.

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.2.3 and 9.1.2.4 for TDD intra-frequency RSRP measurements under time-domain measurement resource restriction with non-MBSFN ABS configured in the aggressor cell.

A.9.1.9.2 Test parameters

In this set of test cases all cells are on the same carrier frequency as PCell. Both absolute and relative accuracy of RSRP intra-frequency measurements are tested, with test parameters specified in Tables A.9.1.9.2-1 and A.9.1.9.2-2.

In the tests there are two synchronous cells, Cell 1 and Cell 2, on the same RF channel. In all test cases, Cell 1 is the serving cell (PCell) and also the aggressor cell to Cell 2. Cell 2 is the cell to be measured for RSRP absolute accuracy, whilst both Cell 1 and Cell 2 are measured for RSRP relative accuracy. Non-MBSFN ABS pattern is configured for Cell 1 during the test. The UE is configured by higher layers via Cell 1 with a time-domain measurement resource restriction pattern for performing E-UTRAN TDD intra-frequency measurements on neighbour cells and provided with a neighbour cell list associated with the pattern, where the cell list includes Cell 2. The UE is also configured with a time-domain measurement resource restriction pattern for the serving cell measurements. The information for both patterns shall be provided to the UE before the measurements start.

Table A.9.1.9.2-1: General test parameters for E-UTRAN TDD RSRP intra frequency test parameters under time-domain measurement resource restriction with non-MBSFN ABS

Parameter	Unit	Value	Comment
Serving cell (PCell)		Cell 1	Also the aggressor cell.
Neighbour cell		Cell 2	Cell to be measured
PCell ABS configuration		Non-MBSFN ABS	As defined in Table A.3.4.1.1-1
Special subframe configuration		6	For Cell 1 and Cell 2. For special subframe
			configurations see Table 4.2-1 in [16].
Uplink/downlink subframe		1	For Cell 1 and Cell 2. For uplink-downlink
configuration			subframe configurations see Table 4.2-2 in [16].
CP length		Normal	For both cells in the test
DRX			OFF
Time offset between cells		3 μs	Synchronous cells
Physical cell ID PCI		(PCI _{cell1} - PCI _{cell2})mod6	Cell PCIs for Cell 1 and Cell 2 are randomly
•		!=0	selected so that the condition is met
ABS pattern		'000000001000000001'	Non-MBSFN ABS. TDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 1. The first/leftmost bit corresponds to the subframe #0 of a radio frame satisfying SFN mod x = 0, where x is the size of the bit string (20) divided by 10. No MBSFN subframes are cofigured in the ABS subframes in Cell 1.
Time-domain measurement resource restriction pattern for neighbour cell measurements on RF Channel 1		'000000001000000001'	Configured for Cell 2 measurements by measSubframePattern-Neigh IE in measSubframePatternConfig-Neigh, as defined in TS 36.331 [2], clause 6.3.5. measSubframeCellList contains Cell 2.
Time-domain measurement resource restriction pattern for serving cell measurements		'10000000001000000000'	Configured for Cell 1 measurements.

Table A.9.1.9.2-2: Cell-specific test parameters for E-UTRAN TDD RSRP intra-frequency test parameters under time-domain measurement resource restriction with non-MBSFN ABS

Darameter	l lnit	Tes	st 1	Tes	Test 2		Test 3	
Parameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2	
E-UTRA RF Channel Number			1	•	-		1	
BW _{channel}	MHz	1	0	10		1	0	
Measurement bandwidth	n_{PRB}	22-	–27	22-	–27	22—27		
PDSCH Reference measurement channel defined in A.3.1.1.2		R.0 TDD	-	R.0 TDD	-	R.0 TDD	-	
PDSCH allocation	n_{PRB}	13—36	-	13—36	-	13—36	-	
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.2		R.6	TDD	R.6	TDD	R.6	TDD	
OCNG Patterns defined in A.3.2.2.1 (OP.1 TDD) and A.3.2.2.2 (OP.2 TDD)		OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD	
PBCH_RA PBCH_RB PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RA OCNG_RB	dB	Note 6	0	Note 6	0	Note 6	0	
PSS_RA	dB	-4	0	-4	0	-4	0	
SSS_RA	dB	-4	0	-4	0	-4	0	
N _{oc} Note 2 Bands TDD_A Bands TDD_C Bands TDD_E	dBm/15 kHz	-1	06	-8	38	-1	16 15 14	
CRS \hat{E}_s/N_{oc}	dB	5	-2	5	-4	5	-4	
CRS $(\hat{E}_s/I_{ot})_{meas}$ Note 5	dB	2.88	-2	3.54	-4	5	-4	
SCH \hat{E}_s/I_{ot}	dB	-1.12	-5.54	-0.46	-7.54	-0.46	-7.54	
RSRP Note3,4,5 Bands TDD_A Bands TDD_C Bands TDD_E	dBm/15 kHz	-101	-108	-83	-92	-111 -110 -109	-120 -119 -118	
(Io) _{meas} Note 3 Bands TDD_A Bands TDD_C Bands TDD_E	dBm/9 MHz	-71.41	-74.88	-53.63	-57.37	-81.6 -80.6 -79.6	-85.4 -84.4 -83.4	
Propagation condition			'GN	AW			'GN	
Note 1: OCNG shall be used such	that both cells a	re fully allo	cated and	a constant	total trans	mitted now	/er	

- Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. Applies to all subframes.
- Note 3: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io levels are calculated in CRS symbols of measurement restricted subframes.
- Note 4: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
- Note 5: Applies to restricted measurement subframes of the respective cell.
- Note 6: Non-ABS and ABS subframe channel powers defined in Table A.3.4.1.1-1.
- Note 7: E-UTRA operating band groups are as defined in Section 3.5.

A.9.1.9.3 Test Requirements

The absolute RSRP measurement accuracy and relative RSRP measurement accuracy shall fulfill the requirements in Sections 9.1.2.3 and 9.1.2.4, respectively.

A.9.1.10 FDD RSRP under Time-Domain Measurement Resource Restriction with MBSFN ABS

A.9.1.10.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.2.3 and 9.1.2.4 for FDD intra-frequency RSRP measurements under timedomain measurement resource restriction with MBSFN ABS configured in the aggressor cell.

A.9.1.10.2 Test parameters

In this set of test cases all cells are on the same carrier frequency as PCell. Both absolute and relative accuracy of RSRP intra-frequency measurements are tested, with test parameters specified in Tables A.9.1.10.2-1 and A.9.1.10.2-2.

In the tests there are two synchronous cells, Cell 1 and Cell 2, on the same RF channel. In all test cases, Cell 1 is the serving cell (PCell) and also the aggressor cell to Cell 2. Cell 2 is the cell to be measured for RSRP absolute accuracy, whilst both Cell 1 and Cell 2 are measured for RSRP relative accuracy. MBSFN ABS pattern is configured in Cell 1 during the test. The UE is configured by higher layers via Cell 1 with a time-domain measurement resource restriction pattern for performing E-UTRAN FDD intra-frequency measurements on neighbour cells and provided with a neighbour cell list associated with the pattern, where the cell list includes Cell 2. The UE is also configured with a time-domain measurement resource restriction pattern for the serving cell measurements. The information for both patterns shall be provided to the UE before the measurements start.

Table A.9.1.10.2-1: General test parameters for E-UTRAN FDD RSRP intra-frequency test parameters under time-domain measurement resource restriction with MBSFN ABS

Parameter	Unit	Value	Comment
Serving cell (PCell)		Cell 1	The aggressor cell to Cell 2
Neighbour cell		Cell 2	Cell to be measured
PCell ABS configuration		MBSFN ABS	As defined in Table A.3.4.2.1-1
CP length		Normal	For both cells in the test
DRX			OFF
Time offset between cells		3 μs	Synchronous cells
Physical cell ID PCI		(PCI _{cell1} - PCI _{cell2})mod6 =0, PCI _{cell1} not equal to PCI _{cell2}	Cell PCIs for Cell 1 and Cell 2 are selected randomly so that the condition is met
ABS pattern		'0100000010000001000 00000010000001000000	MBSFN ABS pattern. FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 1. The first/leftmost bit corresponds to the subframe #0 of a radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. All ABS subframes are MBSFN subframes.
Time-domain measurement resource restriction pattern for neighbour cell measurements on RF Channel 1		'0100000010000001000 00000010000001000000	Configured for Cell 2 measurements by measSubframePatternNeigh IE in measSubframePatternConfigNeigh, as defined in TS 36.331 [2], clause 6.3.5. measSubframeCellList contains Cell 2.
Time-domain measurement resource restriction pattern for serving cell measurements		'0001000000100000001 00000001000000010000'	Configured for measurements on Cell 1.

Table A.9.1.10.2-2: Cell-specific test parameters for E-UTRAN FDD RSRP intra-frequency test parameters under time-domain measurement resource restriction with MBSFN ABS

			Tes	st 1	Tes	st 2	Tes	st 3
Pai	rameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF Cha	annel Number				1		1	
BW _{channel}	annor rannor	MHz	10		10		10	
	م مادد بأ ماذاء				22—27		22—27	
Measurement b		n_{PRB}		- 27		-21	22-	-21
	nce measurement		R.0	_	R.0	_	R.0	_
channel defined	l in A.3.1.1.1		FDD		FDD		FDD	
PDSCH allocation	on	n_{PRB}	13—36	-	13—36	-	13—36	-
PDCCH/PCFICE	H/PHICH Reference	1 Kb						
	hannel defined in		R.6	FDD	R.6	FDD	R.6	FDD
A.3.1.2.1								
OCNG Patterns	defined in A.3.2.1.8		00.0	00.0	00.0	00.0	00.0	00.0
(OP.8 FDD) and	d A.3.2.1.6 (OP.6		OP.8 FDD	OP.6 FDD	OP.8 FDD	OP.6 FDD	OP.8 FDD	OP.6 FDD
FDD)			FDD	FDD	FDD	FDD	FUU	FDD
PBCH_RA								
PBCH_RB								
PCFICH_RB								
PHICH_RA								
PHICH_RB				_		_		_
PDCCH_RA		dB	Note 6	0	Note 6	0	Note 6	0
PDCCH_RB								
PDSCH_RA								
PDSCH_RB OCNG_RA ^{Note1}								
OCNG_RB Note1								
		4D	4	0	4	0	4	0
PSS_RA		dB	-4	0	-4	0	-4	0
SSS_RA	Dondo EDD A	dB	-4	0	-4	0	-4	0
	Bands FDD_A Bands FDD_B							16 5.5
	Bands FDD_C	dBm/15 kHz					-	5.5 15
Note 2	Bands FDD_D				-88		<u> </u>	4.5
$N_{oc}^{ m Note~2}$			-1	06				
	Bands FDD_E, FDD_F Note 8						-114	
	Bands FDD_G Note						440	
	10						-1	13
	Bands FDD_H						-112.5	
CRS \hat{E}_s/N_{oc}		dB	5	-2	5	-4	5	-4
		QD.			0	7		7
$ CRS (\hat{E}_s/Iot)_n $	Note 5, 7 in the 1 st	dB	2.88	-8.19	3.54	10.10	254	10.10
OFDM symbol	ieus	uБ	2.00	-0.19	3.54	-10.19	3.54	-10.19
	Note 5 : OFDM							
	Note 5 in OFDM	dB	2.88	-2	3.54	-4	3.54	-4
symbols 4,7,11								
SCH \hat{E}_{s}/I_{ot}		dB	-1.12	-5.54	-0.46	-7.54	-0.46	-7.54
\$ 1 01	Bands FDD_A						-111	-120
	Bands FDD_B						-110.5	-120
	Bands FDD_C						-110.5	-119.5
	Bands FDD_D						-109.5	-118.5
RSRP Note 3,4	Bands FDD F	dBm/15 kHz	-101	-108	-83	-92		
	FDD_F Note 8						-109	-118
	Bands FDD_G Note						100	117
	10						-108	-117
	Bands FDD_H						-107.5	-116.5
	Bands FDD_A						-81.63	-85.37
	Bands FDD_B						-81.13	-84.87
$(Io)_{meas}$ Note 3	Bands FDD_C						-80.63	-84.37
	Bands FDD_D	dBm/9 MHz	-71.41	-74.88	-53.63	-57.37	-80.13	-83.87
in the 1 st OFDM symbol	Bands FDD_E, FDD_F Note 8				50.50	-57.37	-79.63	-83.37
Syllibul	Pondo EDD O Note							
	Bands FDD_G Note						-78.63	-82.37
	<u> </u>						ļ	

	Bands FDD_H						-78.13	-81.87
	Bands FDD_A			.41 -76.09	-53.63	-58.76	-81.63	-86.76
	Bands FDD_B						-81.13	-86.26
$(Io)_{meas}$ Note 3	Bands FDD_C	dBm/9 MHz					-80.63	-85.76
in OFDM	Bands FDD_D						-80.13	-85.26
au mala ala atla au	Bands FDD_E, FDD_F Note 8		-71.41				-79.63	-84.76
	Bands FDD_G Note						-78.63	-83.76
	Bands FDD_H						-78.13	-83. 26
Propagation con	dition		AW	'GN	AW	'GN	AW	GN

- Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
- Note 3: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io levels are calculated in CRS symbols of measurement restricted subframes.
- Note 4: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
- Note 5: Applies to restricted measurement subframes of the respective cell.
- Note 6: Non-ABS and ABS subframe channel powers defined in Table A.3.4.2.1-1.
- Note 7: In the 1st OFDM symbol, Cell 2 is not expected to meet the Es/lot side condition in 9.1.2.3 and 9.1.2.4.
- Note 8: For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.
- Note 9: E-UTRA operating band groups are as defined in Section 3.5.
- Note 10: Except Band 29 and Band 32.

A.9.1.10.3 Test Requirements

The absolute RSRP measurement accuracy and relative RSRP measurement accuracy shall fulfill the requirements in Sections 9.1.2.3 and 9.1.2.4, respectively.

A.9.1.11 TDD RSRP under Time-Domain Measurement Resource Restriction with MBSFN ABS

A.9.1.11.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.2.3 and 9.1.2.4 for TDD intra-frequency RSRP measurements under time-domain measurement resource restriction with MBSFN ABS configured in the aggressor cell.

A.9.1.11.2 Test parameters

In this set of test cases all cells are on the same carrier frequency as PCell. Both absolute and relative accuracy of RSRP intra-frequency measurements are tested, with test parameters specified in Tables A.9.1.11.2-1 and A.9.1.11.2-2.

In the tests there are two synchronous cells, Cell 1 and Cell 2, on the same RF channel. In all test cases, Cell 1 is the serving cell (PCell) and also the aggressor cell to Cell 2. Cell 2 is the cell to be measured for RSRP absolute accuracy, whilst both Cell 1 and Cell 2 are measured for RSRP relative accuracy. MBSFN ABS pattern is configured in Cell 1 during the test. The UE is configured by higher layers via Cell 1 with a time-domain measurement resource restriction pattern for performing E-UTRAN TDD intra-frequency measurements on neighbour cells and provided with a neighbour cell list associated with the pattern, where the cell list includes Cell 2. The UE is also configured with a time-domain measurement resource restriction pattern for the serving cell measurements. The information for both patterns shall be provided to the UE before the measurements start.

Table A.9.1.11.2-1: General test parameters for E-UTRAN TDD RSRP intra-frequency test parameters under time-domain measurement resource restriction with MBSFN ABS

Parameter	Unit	Value	Comment
Serving cell (PCell)		Cell 1	The aggressor cell to Cell 2
Neighbour cell		Cell 2	Cell to be measured
PCell ABS configuration		MBSFN ABS	As defined in Table A.3.4.2.1-1
Special subframe configuration		6	For Cell 1 and Cell 2. For special subframe
			configurations see Table 4.2-1 in [16].
Uplink/downlink subframe		1	For Cell 1 and Cell 2. For uplink-downlink
configuration			subframe configurations see Table 4.2-2 in [16].
CP length		Normal	For both cells in the test
DRX			OFF
Time offset between cells		3 μs	Synchronous cells
Physical cell ID PCI		(PCI _{cell1} - PCI _{cell2})mod6	Cell PCIs for Cell 1 and Cell 2 are selected
		=0, PCI _{cell1} not equal to	randomly so that the condition is met
		PCI _{cell2}	
ABS pattern			MBSFN ABS pattern. TDD ABS Pattern Info IE,
		'0000100000000100000'	as defined in TS 36.423 [28], clause 9.2.54.
			Configured in Cell 1.
			The first/leftmost bit corresponds to the
			subframe #0 of a radio frame satisfying SFN
			mod $x = 0$, where x is the size of the bit string
			(20) divided by 10. All ABS subframes are
Time demain measurement			MBSFN subframes.
Time-domain measurement		(0000100000000100001	Configured for Cell 2 measurements by
resource restriction pattern for		'00001000000000100000'	measSubframePatternNeigh IE in
neighbour cell measurements on RF Channel 1			measSubframePatternConfigNeigh, as defined in TS 36.331 [2], clause 6.3.5.
NE CHAIIILEI I			measSubframeCellList contains Cell 2.
Time-domain measurement		(40000000000000000000000000000000000000	Configured for measurements on Cell 1.
resource restriction pattern for		'1000000001000000000'	
serving cell measurements			

Table A.9.1.11.2-2: Cell-specific test parameters for E-UTRAN TDD RSRP intra-frequency test parameters under time-domain measurement resource restriction with MBSFN ABS

Parameter E-UTRA RF Channel Number		Unit	Test 1		Tes	st 2	Test 3		
		Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2	
-	nel Number			-	1			1	
BW _{channel}		MHz	10		10		10		
Measurement bar		n_{PRB}	22-	–27	22-	–27	22—27		
PDSCH Referenc channel defined in			R.0 TDD	-	R.0 TDD	-	R.0 TDD	-	
PDSCH allocation	1	n_{PRB}	13—36	-	13—36	-	13— 36	-	
measurement cha A.3.1.2.2			R.6	TDD	R.6	TDD	R.6	TDD	
(OP.5 TDD) and A	efined in A.3.2.2.5 A.3.2.2.2 (OP.2		OP.5 TDD	OP.2 TDD	OP.5 TDD	OP.2 TDD	OP.5 TDD	OP.2 TDD	
PBCH_RA PBCH_RB PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RA OCNG_RB Note1		dB	Note 6	0	Note 6	0	Note 6	0	
PSS_RA		dB	-4	0	-4	0	-4	0	
SSS_RA		dB	-4	0	-4	0	-4	0	
$N_{oc}^{ m Note 2}$	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/15 kHz	-1	06	-8	38	-1	16 15 14	
CRS \hat{E}_s/N_{oc}		dB	5	-2	5	-4	5	-4	
CRS $(\hat{E}_s/Iot)_{mea}$ 1st OFDM symbol		dB	2.88	-8.19	3.54	-10.19	3.54	-10.19	
CRS $(\hat{E}_s/Iot)_{mea}$ symbols 4,7,11	s note 5 in OFDM	dB	2.88	-2	3.54	-4	3.54	-4	
SCH \hat{E}_s/I_{ot}		dB	-1.12	-5.54	-0.46	-7.54	-0.46	-7.54	
RSRP Note 3,4	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/15 kHz	-101	-108	-83	-92	-111 -110 -109	-120 -119 -118	
$(Io)_{meas}^{\text{Note 3}}$ in the 1 st OFDM symbol	Bands TDD_A Bands TDD_C Bands TDD_E	. dBm/9 MHz	-71.41	-74.88	-53.63	-57.37	-81.63 -80.63 -79.63	-85.37 -84.37 -83.37	
$(Io)_{meas}^{Note 3}$ in OFDM	Bands TDD_A Bands TDD_C	dBm/9 MHz	-71.41	-76.09	-53.63	-58.76	-81.63 -80.63	-86.76 -85.76	
	D TDD E		1				-79.63	-84.76	
symbols other than the 1 st one Propagation cond	Bands TDD_E			GN	AW			/GN	

Note 1:	OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
Note 2:	Interference from other cells and noise sources not specified in the test is assumed to be constant over
	subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
Note 3:	Applies to all subframes. RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io levels are calculated in CRS symbols of measurement restricted subframes.
Note 4:	RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port
Note 5:	Applies to restricted measurement subframes of the respective cell.
Note 6:	Non-ABS and ABS subframe channel powers defined in Table A.3.4.2.1-1.
Note 7:	In the 1 st OFDM symbol, Cell 2 is not expected to meet the Es/lot side condition in 9.1.2.3 and 9.1.2.4.
Note 8:	E-UTRA operating band groups are as defined in Section 3.5.

A.9.1.11.3 Test Requirements

The absolute RSRP measurement accuracy and relative RSRP measurement accuracy shall fulfill the requirements in Sections 9.1.2.3 and 9.1.2.4, respectively.

A.9.1.12 FDD RSRP for E-UTRAN Carrier Aggregation for 20MHz

The test case in this section are applicable to carrier aggregation capable UEs which have been configured with a downlink Scell.

A.9.1.12.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.9.1.6.1.

A.9.1.12.2 Test parameters

The test parameters are the same except those described in the following section. The listed parameter values in Tables A.9.1.12.2-1 will replace the values of corresponding parameters in Tables A.9.1.6.2-1.

Table A.9.1.12.2-1: RSRP FDD carrier aggregation test parameters

Do		I I m i t		Test 1			
	rameter	Unit	Cell 1	Cell 2	Cell 3		
BW _{channel} Note 1		MHz	20	20	20		
	Measurement bandwidth		47—52				
PDSCH Refere	ence measurement d in A.3.1.1.1		R.4 FDD	R.4 FDD	N/A		
PDSCH allocat	ion	$n_{\scriptscriptstyle PRB}$	38—61	38—61	N/A		
PDCCH/PCFIC Reference mea defined in A.3.	surement channel			R.10 FDD			
A.3.2.1.11 (OP	OCNG Patterns defined in A.3.2.1.11 (OP.11 FDD) and A.3.2.1.12 (OP.12 FDD)		OP.11 FDD	OP.11 FDD	OP.12 FDD		
	Bands FDD_A Note 5		-84.75				
	Bands FDD_B		-84.25				
	Bands FDD_C Note 5		-83.75				
lo ^{Note2}	Bands FDD_D Note 5	dBm/18 MHz	-83.25	(lo for Channel 1 +5.33dB			
	Bands FDD_E Note 5		-82.75				
	Bands FDD_G Note 5		-81.75				
	Bands FDD_H		-81.25				

- Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.
- Note 2: Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 3: See Table A.9.1.6.2-1 for the other parameters.
- Note 4: E-UTRA operating band groups are as defined in Section 3.5.
- Note 5: The test applies for E-UTRA operating bands in this band group which are

supporting 20 MHz channel bandwidth.

A.9.1.12.3 Test Requirements

The test requirements defined in section A.9.1.6.3 shall apply to this test case.

A.9.1.13 TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz

The test case in this section are applicable to carrier aggregation capable UEs which have been configured with a downlink Scell.

A.9.1.13.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.9.1.7.1.

A.9.1.13.2 Test parameters

The test parameters are the same except those described in the following section. The listed parameter values in Tables A.9.1.13.2-1 will replace the values of corresponding parameters in Tables A.9.1.7.2-1.

Table A.9.1.13.2-1: Carrier aggregation RSRP test parameters for TDD

	Parameter	Unit		Test 1	
		Unit	Cell 1	Cell 2	Cell 3
BW _{channel}	Note 1	MHz		20	
Measurer	ment bandwidth	n_{PRB}	47—52		
	Reference measurement channel n A.3.1.1.2		R.3 TDD R.3 TDD N/A		
PDSCH a	allocation	n_{PRB}	38—61 38—61 N/A		
	PCFICH/PHICH Reference ment channel defined in A.3.1.2.2		R.10 TDD		
	atterns defined in A.3.2.2.7 (OP.7 I A.3.2.2.8 (OP.8 TDD)		OP.7 TDD OP.7 TDD OF		
lo ^{Note2}	Bands TDD_A Note 5 Bands TDD_C Note 5 Bands TDD_E Note 5	dBm/18 MHz	-84.75 -83.75 -82.75	`	hannel 1 3dB)
Note 1: Note 2:	Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.				
Note 3: Note 4: Note 5:	See Table A.9.1.7.2-1 for the other partial E-UTRA operating band groups are a The test applies for E-UTRA operating MHz channel bandwidth.	is defined in Se		hich are supp	orting 20

A.9.1.13.3 Test Requirements

The test requirements defined in section A.9.1.7.3 shall apply to this test case.

A.9.1.14 FDD RSRP under Time-Domain Measurement Resource Restriction with CRS Assistance Information and Non-MBSFN ABS

A.9.1.14.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.2.5 and 9.1.2.6 for FDD intra-frequency RSRP measurements under time-domain measurement resource restriction with CRS Assistance Information and non-MBSFN ABS configured in the aggressor cells.

A.9.1.14.2 Test parameters

In this set of test cases all cells are on the same carrier frequency as PCell. Both absolute and relative accuracy of RSRP intra-frequency measurements are tested, with test parameters specified in Tables A.9.1.14.2-1 and A.9.1.14.2-2.

In the tests there are three synchronous cells, Cell 1, Cell2 and Cell 3, on the same RF channel. In all test cases, Cell 1 is the serving cell (PCell) and also the aggressor cell to Cell 3. Cell 2 is the neighbour aggressor cell without CRS colliding to Cell 3. Cell 3 is the cell to be measured for RSRP absolute accuracy, whilst both Cell 1 and Cell 3 are measured for RSRP relative accuracy. Non-MBSFN ABS pattern is configured for Cell 1 and Cell 2 during the test.

The UE is configured by higher layers with a time domain measurement resource restriction pattern for performing E-UTRAN FDD intra-frequency measurements on neighbour cells, namely Cell 3 measurements. The UE is also provided via higher layers with the CRS assistance information for Cell 2. The information for both measurement pattern and the CRS assistance information shall be provided via RRC to the UE before the measurements start.

Note: It's up to eNB's implementation whether the time domain measurement resource restriction pattern for PCell measurements is configured or not.

Table A.9.1.14.2-1: General test parameters for FDD RSRP under Time-Domain Measurement Resource Restriction with CRS Assistance Information and Non-MBSFN ABS

Parameter	Unit	Value	Comment
Serving cell (PCell)		Cell 1	The aggressor cell to Cell 3
Neighbour cell		Cell 2	The aggressor cell to Cell 3
Neighbour cell		Cell 3	Cell to be measured
PCell ABS configuration		Non-MBSFN ABS	As defined in Table A.3.4.1.1-1
CP length		Normal	For three cells in the test
DRX			OFF
Cell 2 time offset with respe-		0μs	Synchronous cells
Cell 3 time offset with respected 1	ct to	-2.5 μs	Synchronous cells
Physical cell ID PCI		Colliding CRS: (PCI _{cell1} – PCI _{cell3})mod6=0, PCI _{cell1} not equal to PCI _{cell3} Non-colliding CRS: (PCI _{cell2} – PCI _{cell3})mod6 !=0	Cell PCIs for three cells are selected randomly so that all conditions are met
ABS pattern		'1000000010000001000 00001000000010000000	Non-MBSFN ABS. FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 1. The first/leftmost bit corresponds to the Pcell subframe #0 of a radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. No MBSFN subframes are configured in the ABS subframes in Cell 1.
Time-domain measurement resource restriction pattern f neighbour cell measuremen RF Channel 1	or	'1000000010000001000 00001000000010000000	Time domain measurement resource restriction pattern for neighbor cell measurement signalled to the UE in measSubframePatternNeigh IE in measSubframePatternConfigNeigh, as defined in TS 36.331, clause 6.3.5. Configured before the measurements start. The cell list in measSubframeCellList IE shall contain Cell 3 but not Cell 2.
Time-domain measurement resource restriction pattern f serving cell measurements	or	'0100000001000000100 00000100000001000000	Configured for measurements on Cell 1.
CRS physCellic		see PCI conditions above	The CRS assistance information is provided for
assistance antennaPo	ortsC	1	Cell 2 only in CRS-AssistanceInfo. It includes a
information ount			single MBSFN-SubframeConfig element with
mbsfn- Subframet gList	Confi	oneFrame = '000000'	subframe allocation one Frame='000000'.

Table A.9.1.14.2-2: Cell-specific test parameters for FDD RSRP under Time-Domain Measurement Resource Restriction with CRS Assistance Information and Non-MBSFN ABS

Dor	omotor.	Unit		Test 1			Test 2			Test 3	
	ameter	Unit	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3
E-UTRA RF Channel Number		N 41 1-		1		1		1			
BW _{channel}		MHz		10		10		10			
Measurement		n_{PRB}		22—27			22—27	1		22—27	ı
PDSCH Refere			R.0	_	_	R.0	_	_	R.0	_	_
measurement channel defined in A.3.1.1.1			FDD		_	FDD			FDD	_	
PDSCH alloca		n_{PRB}	13—36		-	13—36	-	-	13—36	-	-
PDCCH/PCFIC				0.0500			D 0 EDD			D 0 EDD	
Reference mea				R.6 FDD			R.6 FDD			R.6 FDD	
OCNG Pattern			00.5	OP.6	OD C	OD 5	ODC	OP.6	OD 5	OD C	OP.6
A.3.2.1.5 (OP.			OP.5 FDD	FDD	OP.6 FDD	OP.5 FDD	OP.6 FDD	FDD	OP.5 FDD	OP.6 FDD	FDD
A.3.2.1.6 (OP. PBCH_RA	6 FDD)										
PBCH_RB											
PSS_RA											
SSS_RA											
PCFICH_RB PHICH_RA											
PHICH_RB		dB	Note 6	Note	0	Note 6	Note 6	0	Note 6	Note 6	0
PDCCH_RA				6							
PDCCH_RB											
PDSCH_RA PDSCH_RB											
OCNG_RA ^{Note}	OCNG RA ^{Note1}										
OCNG_RB ^{Note}	1										
_	Bands FDD_A						•	•		-116	•
	Bands FDD_B	,								-115.5	
n a Note 2	Bands FDD_C Bands FDD_D	•		-106						-115 -114.5	
$N_{oc}^{ m Note2}$	Bands FDD E.	dBm/15 kHz					-88		-114		
	FDD_F Note 7 Bands FDD_G	KI IZ			N IZ						
	Note 9 Bands FDD_H									-113 -112.5	
		ID.	4		4.5						
CRS \hat{E}_s/N_{oc}	Note 5	dB	4	2	-1.5	4	2	-4	4	2	-4
CRS (\hat{E}_{s}/I_{ot})		dB	-1.18	-0.32	-6.96	-0.75	0.54	-9.46	-0.75	0.54	-9.46
	Bands FDD_A								-112	-114	-120
	Bands FDD_B Bands FDD_C	,							-111.5 -111	-113.5 -113	119.5 -119
	Bands FDD_D								-110.5	-112.5	-
RSRP Note3,4,5	Bands FDD F.	dBm/15 kHz	-102	-104	- 107.5	-84	-86	-92	-110	-112	118.5 -118
	FDD_F Note 7 Bands FDD_G Note 9	N. 12			107.0						
									-109	-111	-117 -
	Bands FDD_H								-108.5	-110.5	116.5
	Bands FDD_A Bands FDD_B	•							-80.82 -80.32	-85. -84.	
	Bands FDD_B								-79.82	-84.	
(-)	Bands FDD_D	dBm/9							-79.32	-83.	
$(Io)_{meas}^{Note 3,5}$	Bands FDD_E, FDD_F Note 7	MHz	-70.58	-74	.43	-52.82	-57.	04	-78.82	-83.	04
	Bands FDD_G Note 9								-77.82	-82.	04
	Bands FDD_H								-77.32	-81.	54
Propagation co	ondition			AWGN			AWGN			AWGN	

- Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled. Applies to all subframes.
- Note 3: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io levels are calculated in CRS symbols of measurement restricted subframes.
- Note 4: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
- Note 5: Applies to restricted measurement subframes for only Cell 2 and Cell 3. For Cell 1, the corresponding value is derived from the normal subframes other than the subframes indicated in the time domain measurement resource restriction pattern for intra-frequency measurements.
- Note 6: Non-ABS and ABS subframe channel powers defined in Table A.3.4.1.1-1.
- Note 7: For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.
- Note 8: E-UTRA operating band groups are as defined in Section 3.5.
- Note 9: Except Band 29 and Band 32.

A.9.1.14.3 Test Requirements

The absolute RSRP measurement accuracy and relative RSRP measurement accuracy shall fulfill the requirements in Sections 9.1.2.5 and 9.1.2.6, respectively.

A.9.1.15 TDD RSRP under Time-Domain Measurement Resource Restriction with CRS Assistance Information and Non-MBSFN ABS

A.9.1.15.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.2.5 and 9.1.2.6 for TDD intra-frequency RSRP measurements under time-domain measurement resource restriction with CRS Assistance Information and non-MBSFN ABS configured in the aggressor cells.

A.9.1.15.2 Test parameters

In this set of test cases all cells are on the same carrier frequency as PCell. Both absolute and relative accuracy of RSRP intra-frequency measurements are tested, with test parameters specified in Tables A.9.1.15.2-1 and A.9.1.15.2-2.

In the tests there are three synchronous cells, Cell 1, Cell2 and Cell 3, on the same RF channel. In all test cases, Cell 1 is the serving cell (PCell) and also the aggressor cell to Cell 3. Cell 2 is the neighbour aggressor cell without CRS colliding to Cell 3. Cell 3 is the cell to be measured for RSRP absolute accuracy, whilst both Cell 1 and Cell 3 are measured for RSRP relative accuracy. Non-MBSFN ABS pattern is configured for Cell 1 and Cell 2 during the test.

The UE is configured by higher layers with a time domain measurement resource restriction pattern for performing E-UTRAN TDD intra-frequency measurements on neighbour cells, namely Cell 3 measurements. The UE is also provided via higher layers with the CRS assistance information for Cell 2. The information for both measurement pattern and the CRS assistance information shall be provided via RRC to the UE before the measurements start.

Note: It's up to eNB's implementation whether the time domain measurement resource restriction pattern for PCell measurements is configured or not.

Table A.9.1.15.2-1: General test parameters for TDD RSRP under Time-Domain Measurement Resource Restriction with CRS Assistance Information and Non-MBSFN ABS

Parameter	Unit	Value	Comment
Serving cell (PCell)		Cell 1	The aggressor cell to Cell 3
Neighbour cell		Cell 2	The aggressor cell to Cell 3
Neighbour cell		Cell 3	Cell to be measured
PCell ABS configuration		Non-MBSFN ABS	As defined in Table A.3.4.1.1-1
CP length		Normal	For three cells in the test
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The
			same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211. The
			same configuration in both cells
DRX			OFF
Cell 2 time offset with respect to		0μs	Synchronous cells
Cell 1		•	
Cell 3 time offset with respect to		-2.5 μs	Synchronous cells
Cell 1		·	
Physical cell ID PCI		Colliding CRS: (PCI _{cell1} –	Cell PCIs for three cells are selected randomly
		PCI _{cell3})mod6=0,	so that all conditions are met
		PCI _{cell1} not equal to	
		PCI _{cell3}	
		Non-colliding CRS:	
		(PCI _{cell2} - PCI _{cell3})mod6	
		!=0	
ABS pattern			TDD ABS Pattern Info IE, as defined in TS
		'000000001000000001'	36.423 [28], clause 9.2.54.
			The first/leftmost bit corresponds to the Pcell
			subframe #0 of the radio frame satisfying SFN
			mod $x = 0$, where x is the size of the bit string
			(20) divided by 10. No MBSFN subframes are
			configured in the ABS subframes. Provided to the UE for Cell 1 and Cell 2 before
			the measurements start.
Time-domain measurement			Time domain measurement resource restriction
resource restriction pattern for		'0000000010000000001'	pattern for neighbor cell measurement signalled
neighbour cell measurements on		000000001000000001	to the UE in measSubframePatternNeigh IE in
RF Channel 1			measSubframePatternConfigNeigh, as defined
I Ki Chameri			in TS 36.331, clause 6.3.5.
			Configured before the measurements start. The
			cell list in measSubframeCellList IE shall contain
			Cell 3 but not Cell 2.
Time-domain measurement	1		Configured for Cell 1 measurements.
resource restriction pattern for		'100000000100000000'	January 101 John 1 Modern of Monte 1
serving cell measurements			
<u> </u>			
CRS physCellId	+	see PCI conditions above	The CRS assistance information is provided for
assistance antennaPortsC	-	300 i Oi conditions above	Cell 2 only in CRS-AssistanceInfo. It includes a
information ount		1	single MBSFN-SubframeConfig element with
mbsfn-	-	oneFrame = '000000'	subframe allocation one Frame='000000'.
SubframeConfi		0.101 141110 = 000000	
gList			
y∟iot	1	1	1

Table A.9.1.15.2-2: Cell-specific test parameters for TDD RSRP under Time-Domain Measurement Resource Restriction with CRS Assistance Information and Non-MBSFN ABS

Davamatar	I I mit		Test 1			Test 2			Test 3	
Parameter	Unit	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3
E-UTRA RF Channel Number			1			1			1	
BW _{channel}	MHz		10		10		10			
Measurement bandwidth	n_{PRB}	22—27			22—27			22—27		
PDSCH Reference measurement channel defined in A.3.1.1.2		R.0 TDD	-	-	R.0 TDD	-	-	R.0 TDD	-	-
PDSCH allocation	n_{PRB}	13—36	-	-	13—36	-	-	13—36	-	-
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.2		F	R.6 TDD			R.6 TDD			R.6 TDD	
OCNG Patterns defined in A.3.2.2.5 (OP.5 TDD) and A.3.2.2.6 (OP.6 TDD)		OP.5 TDD	OP.6 TDD	OP.6 TDD	OP.5 TDD	OP.6 TDD	OP.6 TDD	OP.5 TDD	OP.6 TDD	OP.6 TDD
PBCH_RA PBCH_RB										
PSS_RA SSS_RA	\dashv									
PCFICH_RB										
PHICH_RA										
PHICH_RB	dB	Note	- 6	0	Not	te 6	0	Not	te 6	0
PDCCH_RA	- u.b	1101			110			110		
PDCCH_RB										
PDSCH_RA										
PDSCH_RB										
OCNG_RA ^{Note1}										
OCNG_RB ^{Note1}										
N _{oc} Note2 Bands TDD_A Bands TDD_C	dBm/15								-116	•
	- kHz		-106			-88			-115	
Bands TDD_E	KI IZ								-114	
CRS \hat{E}_s/N_{oc}	dB	4	2	-1.5	4	2	-4	4	2	-4
CRS $(\hat{E}_s/I_{ot})_{meas}$ Note 5	dB	-1.18	-0.32	-6.96	-0.75	0.54	-9.46	-0.75	0.54	-9.46
Bands TDD_A	dBm/15	_			_	_		-112	-114	-120
RSRP Note3,4,5 Bands TDD_C	ubiii/15 kHz	-102	-104	107.5	-84	-86	-92	-111	-113	-119
Bands TDD_E	NI IZ			107.5				-110	-112	-118
Bands TDD_A	dBm/9]						-80.82	-85	
$(Io)_{meas}$ Note 3, 5 Bands TDD_C	MHz	-70.58	-74	.43	-52.82	-57.	04	-79.82	-84	
Bands TDD_E	IVII IZ						-78.82			
Propagation condition	1		AWGN			AWGN	: ttl		AWGN	

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled. Applies to all subframes.
- Note 3: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io levels are calculated in CRS symbols of measurement restricted subframes.
- Note 4: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
- Note 5: Applies to restricted measurement subframes for only Cell 2 and Cell 3. For Cell 1, the corresponding value is derived from the normal subframes other than the subframes indicated in the time domain measurement resource restriction pattern for intra-frequency measurements.
- Note 6: Non-ABS and ABS subframe channel powers defined in Table A.3.4.1.1-1.
- Note 7: E-UTRA operating band groups are as defined in Section 3.5.

A.9.1.15.3 Test Requirements

The absolute RSRP measurement accuracy and relative RSRP measurement accuracy shall fulfill the requirements in Sections 9.1.2.5 and 9.1.2.6, respectively.

A.9.1.16 FDD Intra frequency case for 5MHz Bandwidth

A.9.1.16.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.2.1 and 9.1.2.2 for FDD intra frequency measurements.

A.9.1.16.2 Test parameters

In this set of test cases all cells are on the same carrier frequency. Both absolute and relative accuracy of RSRP intra frequency measurements are tested by using the parameters in Table A.9.1.16.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell.

Table A.9.1.16.2-1: RSRP FDD Intra frequency test parameters for 5MHz Bandwidth

Parameter		Unit	Test 1		Test 2		Test 3		
		Offic	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2	
	Channel Number		•	-	•	-		1	
BW _{channel}		MHz	Į.	5		5	5		
Measurement	bandwidth	n_{PRB}	10-	–15	10—15		10—15		
	PDSCH Reference measurement channel defined in A.3.1.1.1-1		R.5 FDD	-	R.5 FDD	-	R.5 FDD	-	
PDSCH alloca		n_{PRB}	7—17	-	7-17	-	7-17	-	
	CH/PHICH Reference channel defined in		R.11	FDD	R.11	FDD	R.11	FDD	
A.3.2.1.16 (O	P.15 FDD) and		OP.15 FDD	OP.16 FDD	OP.15 FDD	OP.16 FDD	OP.15 FDD	OP.16 FDD	
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA									
PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RB OCNG_RA OCNG_RB	PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RB OCNG_RA ^{Note1}		0	0	0	0	0	0	
$N_{oc}^{ m Note2}$	Bands FDD_N	dBm/15 kHz	-1	03	-8	33	-10	-109.5	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	2.46	-5.97	2.46	-5.97	0.46	-5.76	
RSRP ^{Note3}	Bands FDD_N	dBm/15 kHz	-97	-102	-77	-82	-106.5	-110.5	
Io ^{Note3}	Bands FDD_N	dBm/4.5 MHz	-70	.28	-50).28	-78	3.94	
\hat{E}_s/N_{oc}		dB	6	1	6	1	3	-1	
Propagation of	ondition	-	AW	'GN	AW	'GN	AW	'GN	
Note 1: OC	NG shall be used such ectral density is achieved			cated and	a constant	total trans	mitted pov	ver	
	ectral density is achieved			acified in t	ha tast is a	secumed to	ha const	ant over	

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

A.9.1.16.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in sections 9.1.2.1 and 9.1.2.2.

Note 3: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

A.9.1.17 FDD—FDD Inter frequency case for 5MHz Bandwidth

A.9.1.17.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.3.1 and 9.1.3.2 for FDD—FDD inter frequency measurements.

A.9.1.17.2 Test parameters

In this set of test cases the cells are on different carrier frequencies. Both absolute and relative accuracy of RSRP interfrequency measurements are tested by using the parameters in Table A.9.1.17.2-1 In all test cases, Cell 1 is the PCell and Cell 2 the target cell. The inter frequency measurements are supported by a measurement gap.

Table A.9.1.17.2-1: RSRP FDD—FDD Inter frequency test parameters for 5MHz Bandwidth

D-	Parameter Test 1		st 1	Tes	st 2	
Pa	rameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF Ch	nannel Number		1	2	1	2
BW _{channel}	BW _{channel}		5	5	5	5
Gap Pattern Id			0	-	0	-
Measurement I		$n_{\scriptscriptstyle PRB}$	10–	–15	10–	–15
PDSCH Refere	ence measurement d in A.3.1.1.1		R.5 FDD	-	R.5 FDD	-
PDSCH allocat	tion	$n_{\scriptscriptstyle PRB}$	7—17	-	7-17	-
defined in A.3.	asurement channel 1.2.1		R.11	FDD	R.11	FDD
OCNG Pattern A.3.2.1.15 (OP A.3.2.1.16 (OP	.15 FDD) and		OP.15 FDD	OP.16 FDD	OP.15 FDD	OP.16 FDD
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RA Note OCNG_RB	1	dB	0	0	0	0
$N_{oc}^{ m Note2}$	Cell 2: Bands FDD_N	dBm/15 kHz	-85.65	-85.65	-102.5	-110.5
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	10	10	13	-4
RSRP ^{Note3}	Cell 2: Bands FDD_N	dBm/15 kHz	-75.65	-75.65	-89.5	-114.5
Io ^{Note3}	Cell 2: Bands FDD_N	dBm/4.5 MHz	-50.46	-50.46	-64.52	-84.27
\hat{E}_s/N_{oc}	\hat{E}_s/N_{oc}		10	10	13	-4
Propagation con-		-	AW			GN
Note 1: OCN	JC chall be used suc	h that both calls a	مالم براليد	aatad aad	a aanatant	total

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of

appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

Note 5: For Band 26, the tests shall be performed with the assigned E-UTRA channel

bandwidth within 865-894 MHz.

This test is only applicable for testing inter-frequency requirements for Bands FDD_N. Cell 2 is on the Band under test, and Cell 1 is on another band supported

by the UE.

Table A.9.1.17.2-1: Void

A.9.1.17.3 Test Requirements

Note 6:

The RSRP measurement accuracy shall fulfil the requirements in sections 9.1.3.1 and 9.1.3.2.

A.9.1.18 FDD RSRP for E-UTRAN Carrier Aggregation for 10MHz + 5MHz

The test case in this section are applicable to carrier aggregation capable UEs which have been configured with a downlink Scell.

A.9.1.18.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.9.1.6.1.

A.9.1.18.2 Test parameters

The test parameters are the same except those described in the following section. The listed parameter values in Tables A.9.1.18.2-1 will replace the values of corresponding parameters in Tables A.9.1.6.2-1.

Table A.9.1.18.2-1: RSRP FDD carrier aggregation test parameters

Davamatas		1114	Test 1			
	rameter	Unit	Cell 1	Cell 2	Cell 3	
BW _{channel} Note 1		MHz	10		5	
Measurement	bandwidth	$n_{\scriptscriptstyle PRB}$	22-27	10	-15	
PDSCH Refere	ence measurement ed in A.3.1.1.1		R.0 FDD	R.5 FDD	N/A	
PDSCH alloca	tion	n_{PRB}	13-36	7-17	N/A	
Reference mea	PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.1		R.6 FDD	R.11	FDD	
OCNG Pattern (FDD)	s defined in A.3.2.1		OP.1 FDD	OP.15 FDD	OP.16 FDD	
	Bands FDD_A		-117			
	Bands FDD_B		-116.5			
$N_{oc}^{$	Bands FDD_C	dBm/15 kHz	-116			
	Bands FDD_D		-115.5			
	Bands FDD_E, FDD_F		-115	(N_{oc} for Cha	annel 1 +1dB)	
	Bands FDD_G		-114			
	Bands FDD_H		-113.5			
	Bands FDD N		N/A			
	Bands FDD_A		-121			
	Bands FDD_B		-120.5			
	Bands FDD_C		-120			
	Bands FDD_D		-119.5	(RSRP for	(RSRP for	
RSRP ^{Note2}	Bands FDD_E, FDD_F	dBm/15 kHz	-119	Cell 1 +8dB)	Cell 1 +4dB)	
	Bands FDD_G	_	-118	+oub)	+4ub)	
	Bands FDD_G Bands FDD_H	_	-117.5			
	Bands FDD_N	_	N/A			
	Bands FDD_N		-87.76			
	Bands FDD_B		-87.26			
	Bands FDD_B Bands FDD_C		-86.76			
	Bands FDD_C	_	-86.26			
	Bands FDD_E,	dBm/9 MHz	-00.20	N	/A	
	FDD_F		-85.76			
	Bands FDD_G		-84.76			
	Bands FDD_H		-84.26			
lo ^{Note2}	Bands FDD_A					
	Bands FDD_B					
	Bands FDD_C]				
	Bands FDD_D]		(lo for Chara	ol 1 + 2 224D/	
	Bands FDD_E,	dBm/4.5 MHz	N/A	(10 101 Chann	el 1 +2.32dB)	
	FDD_F					
	Bands FDD_G]				
	Bands FDD_H]				
	Bands FDD_N			-80.94		

Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Note 2: RSRP and lo levels have been derived from other parameters for information

purposes. They are not settable parameters themselves. Note 3: See Table A.9.1.6.2-1 for the other parameters.

A.9.1.18.3 Test Requirements

The test requirements defined in section A.9.1.6.3 shall apply to this test case.

A.9.1.19 TDD RSRP for E-UTRAN Carrier Aggregation for 10MHz + 5MHz

The test case in this section are applicable to carrier aggregation capable UEs which have been configured with a downlink Scell.

A.9.1.19.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.9.1.7.1.

A.9.1.19.2 Test parameters

The test parameters are the same except those described in the following section. The listed parameter values in Tables A.9.1.19.2-1 will replace the values of corresponding parameters in Tables A.9.1.7.2-1.

Table A.9.1.19.2-1: Carrier aggregation RSRP test parameters for TDD

	Parameter	Unit		Test 1	Test 1	
	Parameter	Unit	Cell 1	Cell 2	Cell 3	
BW _{channel} Note 1		MHz	10	5		
Measurement b	andwidth	$n_{\it PRB}$	22-27	10-15		
PDSCH Reference defined in A.3.1	nce measurement channel .1.2		R.0 TDD	R.5 TDD	N/A	
PDSCH allocati	on	n_{PRB}	13-36	7-17 N/A		
	H/PHICH Reference hannel defined in A.3.1.2.2		R.6 TDD	R.11 TDD		
OCNG Patterns A.3.2.2 (TDD)	defined in		OP.1 TDD	OP.9 TDD	OP.10 TDD	
	Bands TDD_A		-87.76			
	Bands TDD_C	dBm/9 MHz	-86.76	N/A		
Io ^{Note2}	Bands TDD_E		-85.76			
10.1012	Bands TDD_A			(la far Cl	annal 1	
	Bands TDD_C	dBm/4.5MHz	N/A	(lo for Cl		
	Bands TDD_E			+2.32dB)		

Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Note 2: lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 3: See Table A.9.1.7.2-1 for the other parameters.

A.9.1.19.3 Test Requirements

The test requirements defined in section A.9.1.7.3 shall apply to this test case.

A.9.1.20 FDD RSRP for E-UTRAN Carrier Aggregation for 5MHz + 5MHz bandwidth

The test case in this section are applicable to carrier aggregation capable UEs which have been configured with a downlink Scell.

A.9.1.20.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.9.1.6.1.

A.9.1.20.2 Test parameters

The test parameters are the same except those described in the following section. The listed parameter values in Tables A.9.1.20.2-1 will replace the values of corresponding parameters in Tables A.9.1.6.2-1.

Table A.9.1.20.2-1: RSRP FDD carrier aggregation test parameters

Par	ameter	Unit		Test 1			
			Cell 1	Cell 2	Cell 3		
BW _{channel} Note 1		MHz	5	5	5		
Measurement b		n_{PRB}	10-15	10-15	10-15		
PDSCH Refere	nce measurement I in A.3.1.1.1		R.0 FDD	R.5 FDD	N/A		
PDSCH allocati	on	n_{PRB}	7-17	7-17	-		
PDCCH/PCFIC							
	Reference measurement channel defined in A.3.1.2.1		R.11 FDD	R.11 FDD	R.11 FDD		
OCNG Patterns							
A.3.2.1.15 (OP.			OP.15	OP.15	OP.16 FDD		
A.3.2.1.26 (OP.			FDD	FDD	01.10100		
7.10.21.1.20 (01.1	Bands FDD_A		-117				
	Bands FDD_B		-116.5				
	Bands FDD_C		-116				
	Bands FDD_D		-115.5				
$N_{oc}^{ m Note2}$	Bands FDD_E,	dBm/15 kHz	-115	(N_{oc} for Cha	annel 1 +1dB)		
	FDD_F Bands FDD_G		-114				
	Bands FDD_G		-113.5				
	Bands FDD_N		-110.5				
	Bands FDD_A		-121				
	Bands FDD_B	1 -	-120.5				
	Bands FDD_C		-120				
	Bands FDD_D		-119.5	(RSRP for	(RSRP for		
RSRP ^{Note2}	Bands FDD_E, FDD_F	dBm/15 kHz	-119	Cell 1 +8dB)	Cell 1 +4dB)		
	Bands FDD_G		-118	+oub)	+4ub)		
	Bands FDD_H		-117.5				
	Bands FDD_N		-114.5				
	Bands FDD A				JI.		
	Note 5		-90.76				
	Bands FDD_B Note 5		-90.26				
	Bands FDD_C Note 5		-89.76				
lo ^{Note2}	Bands FDD_D Note 5	dBm/4.5 MHz	-89.26	(In for Chann	el 1 +5.33dB)		
10	Bands FDD_E, FDD_F Note 5	GBIII/4.5 WII IZ	-88.76	(10 101 Chann	lei i +5.55ub)		
	Bands FDD_G Note 5		-87.76				
	Bands FDD_H Note 5		-87.26				
	Bands FDD_N Note 5		-84.26				
	test verifies the RRM				l bandwidth		
	s performed accordi P and lo levels have				nation		
Note 2: RSRP and Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.					nadon		
	Table A.9.1.6.2-1 for						
Note 5: The t							
supp	orting 5MHz + 5MHz	channel bandwid	th.				

Test Requirements

A.9.1.20.3

The test requirements defined in section A.9.1.6.3 shall apply to this test case.

A.9.1.21 TDD RSRP for E-UTRAN Carrier Aggregation for 5MHz + 5MHz bandwidth

The test case in this section are applicable to carrier aggregation capable UEs which have been configured with a downlink Scell.

A.9.1.21.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.9.1.7.1.

A.9.1.21.2 Test parameters

The test parameters are the same except those described in the following section. The listed parameter values in Tables A.9.1.21.2-1 will replace the values of corresponding parameters in Tables A.9.1.7.2-1.

Table A.9.1.21.2-1: Carrier aggregation RSRP test parameters for TDD

Parameter	Unit	Test 1			
	Onit	Cell 1	Cell 2	Cell 3	
BW _{channel} Note 1	MHz	5	5	5	
Measurement bandwidth	n_{PRB}	10-15	10-15	10-15	
PDSCH Reference measurement channel defined in A.3.1.1.2		R.4 TDD	R.4 TDD	N/A	
PDSCH allocation	n_{PRB}	7-17	7-17	N/A	
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.2		R.11 TDD			
OCNG Patterns defined in A.3.1.2.9 (OP.9 TDD) and A.3.2.2.10 (OP.10 TDD)		OP.9 TDD	OP.9 TDD	OP.10 TDD	
Io ^{Note2} Bands TDD_A Note 5 Bands TDD_C Note 5 Bands TDD_E Note 5	dBm/4.5MHz	-90.76 -89.76 (lo for Channel 1 +5.33dB)			
Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1. Note 2: lo levels have been derived from other parameters for information purposes. They are not					
settable parameters themselves. Note 3: See Table A.9.1.7.2-1 for the other parameters. Note 4: E-UTRA operating band groups are as defined in Section 3.5. Note 5: The test applies for E-UTRA operating bands in this band group which are supporting 5MHz + 5MHz channel bandwidth.					

A.9.1.21.3 Test Requirements

The test requirements defined in section A.9.1.7.3 shall apply to this test case.

A.9.1.22 RSRP for E-UTRAN TDD-FDD Carrier Aggregation with PCell in FDD

A.9.1.22.1 Test Purpose and Environment

The test case is applicable for TDD-FDD carrier aggregation capable UEs which have been configured with a downlink PCell in FDD and a downlink SCell in TDD.

The purpose of this test is to verify that the RSRP absolute and relative measurements accuracy in TDD-FDD carrier aggregation is within the specified limits. This test will verify the absolute RSRP accuracy requirements of the primary component carrier defined in clause 9.1.11.1, the absolute RSRP accuracy requirements of the secondary component carrier defined in clause 9.1.11.2, the relative RSRP accuracy requirements of the secondary component carrier defined in clause 9.1.11.2 between the SCell and a neighbour cell, and the relative RSRP accuracy requirements of the PCell compared to the SCell defined in Clause 9.1.11.3.

A.9.1.22.2 Test parameters

In this test case, Cell 1 is the PCell on the FDD primary component carrier, Cell 2 is the configured and activated SCell on the TDD secondary component carrier, and Cell 3 is the neighboring cell on the TDD secondary component carrier. The test parameters are given in Table A.9.1.22.2-1.

Table A.9.1.22.2-1: RSRP TDD-FDD carrier aggregation test parameters

Pai	rameter	Unit		Test 1	
		Offic	Cell 1	Cell 2	Cell3
E-UTRA RF Ch	nannel Number		1	2	2
			5MHz: N _{RB,c} = 25	5MHz:	5MHz: N _{RB,c}
			10MHz:	$N_{RB,c} = 25$	= 25
BW _{channel}			$N_{RB,c} = 50$	10MHz:	10MHz:
			20MHz:	$N_{RB,c} = 50$ 20MHz:	$N_{RB,c} = 50$ 20MHz:
			$N_{RB,c} =$	$N_{RB,c} = 100$	$N_{RB,c} = 100$
Chaoial aubfran	mo		100		1,2,0
Special subfrar configuration Not	te9		-	6	6
Uplink-downlinl	k configuration Note9		-	1	1
	<u> </u>		5MHz: 10-	5MHz: 10-	5MHz: 10-
			15	15	15
Measurement b	oandwidth	n_{PRB}	10MHz:	10MHz:	10MHz: 22-
		PKB	22-27 20MHz:	22-27 20MHz:	27 20MHz: 47-
			47-52	47-52	52
			5MHz:	5MHz: R.4	-
PDSCH Refere	ence measurement		R.5 FDD	TDD	
	d in A.3.1.1.1 and		10MHz:	10MHz:	
A.3.1.1.2	a / a a a		R.0 FDD	R.0 TDD	
			20MHz: R.4 FDD	20MHz: R.3 TDD	
			5MHz: 7-	5MHz: 7-	
			17	17	
PDSCH allocat	ion	$n_{{\scriptscriptstyle PRB}}$	10MHz:	10MHz:	_
1 Boot anotat		PRB	13-36	13-36	
			20MHz: 38-61	20MHz: 38-61	
			5MHz:	5MHz:	5MHz: R.11
	NI/DUICH		R.11 FDD	R.11 TDD	TDD
PDCCH/PCFIC	asurement channel		10MHz:	10MHz:	10MHz: R.6
	1.2.1 and A.3.1.2.2		R.6 FDD	R.6 TDD	TDD
			20MHz:	20MHz: R.10 TDD	20MHz:
			R.10 FDD 5MHz:	K. IU IDD	R.10 TDD
			OP.15	5MHz:	5MHz:
OCNG Patterns	s defined in		FDD	OP.9 TDD	OP.10 TDD
	I FDD), A.3.2.2.1		10MHz:	10MHz:	10MHz:
	nd A.3.2.2.2 (OP.2		OP.1 FDD	OP.1 TDD	OP.2 TDD
TDD)			20MHz: OP.11	20MHz: OP.7 TDD	20MHz: OP.8 TDD
			FDD	0, 100	00100
	Bands FDD_A		-117		-
	Bands FDD_B		-116.5		-
	Bands FDD_C		-116		-
	Bands FDD_D Bands FDD E,		-115.5		-
$N_{oc}^{ m Note2}$	FDD_F Note 6	dBm/15 kHz	-115		-
	Bands FDD_G		-114		-
	Bands FDD_H		-113.5	-	
	Bands TDD_A		-		
	Bands TDD_C		-	(N_{oc} for Ch	annel 1 +1dB)
<u>^</u> /-	Bands TDD_E		-		
\hat{E}_s/N_{oc}		dB	-4	3	-1
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	-4	0.46	-5.76
	Bands FDD_A		-121	-	-
RSRP ^{Note3}	Bands FDD_B	dBm/15 kHz	-120.5	-	-
	Bands FDD_C		-120 110.5	-	-
	Bands FDD_D		-119.5	-	-

	Bands FDD_E, FDD F Note 6		-119	-	-
	Bands FDD_G		-118	_	_
	Bands FDD_H		-117.5	_	
	Bands TDD_H		-117.5	(RSRP for	
	Bands TDD_A		_	Cell 1	(RSRP for
	Bands TDD_E		-	+8dB)	Cell 1 +4dB)
	Barius IDD_E			+oub)	
	Bands FDD_A		-87.76 + 10log(N _{RB,}		-
			_o /50)		
	Bands FDD_B		-87.26 + 10log(N _{RB,}		-
			√50) -86.76+		
	Bands FDD_C		10log(N _{RB} ,		-
			J50)		
	Bands FDD_D		-86.26+ 10log(N _{RB.}		
. Note3	Ballus FDD_D	,	/50)		-
Io ^{Note3}	Davida EDD. E	dBm/ BW _{channel}	-85.76+		
	Bands FDD_E, FDD_F Note 6		10log(N _{RB.}	-	
	רטט_ר		c/50)		
	Bands FDD_G		-84.76+		
			10log(N _{RB,}		-
			₀/50)		
			-84.26+		
	Bands FDD_H		10log(N _{RB,} √50)		-
	Bands TDD_A		-	(Io for Channel 1 +5.33dB	
	Bands TDD_C		-	+10log	
	Bands TDD_E		-	(N _{RB channel2} / N _{RB channel 1}))	
Propagation		-	AWGN	AWGN	AWGN
Antenna Co		-	1x2	1x2	1x2
Timing offse		μs	-	0	3
Time alignm cell 1 Note 8	nent error relative to	-	-	≤TAE	-
	or special subframe and	l Luplink-downlink d	onfigurations	see Tables 4.:	l 2-1 and 4.2-2
ir	n TS 36.211.	•			
	OCNG shall be used sucl				nt total
	ransmitted power spectra nterference from other co				is assumed
	o be constant over subca				
	appropriate power for to		ia silali be ille	aciica as 7 m	514 01
	s/lot, RSRP and lo level		ed from other	parameters fo	or information
р	ourposes. They are not s				
	RSRP minimum requirem		assuming ind	dependent inte	rference and
	noise at each receiver antenna port. 6: The selection of the bands for testing depends on the configuration of the carrier				
	aggregation supported by the UEs.				
Note 7: F	For Band 26, the tests shall be performed with the carrier frequency of the assigned				
	-UTRA channel bandwid				
	ime alignment error (TA)] clause 6.5.3	.1. The TAE
	alue depends upon the t			3.5	
Note 9: E-UTRA operating band groups are as defined in Section 3.5.					

A.9.1.22.3 Test Requirements

In the test, the performance of RSRP measurements is verified from following four perspectives:

- The absolute accuracy of intra-frequency RSRP measurements for Cell 1 on the primary component carrier shall fulfil the requirements defined in clause 9.1.11.1.
- The absolute accuracy of intra-frequency RSRP measurements for Cell 2 on the secondary component carrier shall fulfil the requirements defined in clause 9.1.11.2.

- The relative accuracy of intra-frequency RSRP measurements for Cell 3 relative to Cell 2 on the secondary component carrier shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of inter-frequency RSRP measurements between the primary and secondary component carriers for Cell 2 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.11.3.A.9.1.23 RSRP for E-UTRAN TDD-FDD Carrier Aggregation with PCell in TDD

A.9.1.23.1 Test Purpose and Environment

The test case is applicable for TDD-FDD carrier aggregation capable UEs which have been configured with a downlink PCell in TDD and a downlink SCell in FDD.

The purpose of this test is to verify that the RSRP absolute and relative measurements accuracy in TDD-FDD carrier aggregation is within the specified limits. This test will verify the absolute RSRP accuracy requirements of the primary component carrier defined in clause 9.1.11.1, the absolute RSRP accuracy requirements of the secondary component carrier defined in clause 9.1.11.2, the relative RSRP accuracy requirements of the secondary component carrier defined in clause 9.1.11.2 between the SCell and a neighbour cell, and the relative RSRP accuracy requirements of the PCell compared to the SCell defined in Clause 9.1.11.3.

A.9.1.23.2 Test parameters

In this test case, Cell 1 is the PCell on the TDD primary component carrier, Cell 2 is the configured and activated SCell on the FDD secondary component carrier, and Cell 3 is the neighboring cell on the FDD secondary component carrier. The test parameters are given in Table A.9.1.23.2-1.

Table A.9.1.23.2-1: RSRP TDD-FDD carrier aggregation test parameters

Par	ameter	Unit		Test 1	
		Onit	Cell 1	Cell 2	Cell3
E-UTRA RF Ch	annel Number		1 5MHz:	2	2
BW _{channel}			N _{RB,c} = 25 10MHz: N _{RB,c} = 50 20MHz: N _{RB,c} = 100	5MHz: $N_{\text{RB,c}} = 25$ 10MHz: $N_{\text{RB,c}} = 50$ 20MHz: $N_{\text{RB,c}} = 100$	$\begin{array}{l} \text{5MHz: N}_{\text{RB,c}} \\ = 25 \\ \text{10MHz:} \\ \text{N}_{\text{RB,c}} = 50 \\ \text{20MHz:} \\ \text{N}_{\text{RB,c}} = 100 \end{array}$
Special subfran	ne				
configuration Not	e1		6	-	-
Uplink-downlink	configuration ^{Note1}		1	-	-
Measurement b	andwidth	$n_{\it PRB}$	5MHz: 10- 15 10MHz: 22-27 20MHz: 47-52	5MHz: 10- 15 10MHz: 22-27 20MHz: 47-52	5MHz: 10- 15 10MHz: 22- 27 20MHz: 47- 52
	nce measurement d in A.3.1.1.1 and		5MHz: R.4 TDD 10MHz: R.0 TDD 20MHz: R.3 TDD	5MHz: R.5 FDD 10MHz: R.0 FDD 20MHz: R.4 FDD	-
PDSCH allocati	ion	$n_{\it PRB}$	5MHz: 7- 17 10MHz: 13-36 20MHz: 38-61	5MHz: 7- 17 10MHz: 13-36 20MHz: 38-61	-
	H/PHICH surement channel .2.1 and A.3.1.2.2		5MHz: R.11 TDD 10MHz: R.6 TDD 20MHz: R.10 TDD	5MHz: R.11 FDD 10MHz: R.6 FDD 20MHz: R.10 FDD	5MHz: R.11 FDD 10MHz: R.6 FDD 20MHz: R.10 FDD
	FDD), A.3.2.2.1 ad A.3.2.1.2 (OP.2		5MHz: OP.9 TDD 10MHz: OP.1 TDD 20MHz: OP.7 TDD	5MHz: OP.15 FDD 10MHz: OP.1 FDD 20MHz: OP.11 FDD	5MHz: OP.16 FDD 10MHz: OP.2 FDD 20MHz: OP.12 FDD
$N_{oc}^{$	Bands FDD_A Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 9 Bands FDD_G Bands FDD_G Bands FDD_H	dBm/15 kHz		(N_{oc} for Ch	annel 1 +1dB)
	Bands TDD_A Bands TDD_C		-117 -116		-
	Bands TDD_E		-115		-
\hat{E}_s/N_{oc}	,	dB	-4	3	-1
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$					
$\mathbf{E}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$		dB	-4	0.46	-5.76
RSRP Note 4	Bands FDD_A Bands FDD_B Bands FDD_C Bands FDD_D	dBm/15 kHz	-	(RSRP for Cell 1 +8dB)	(RSRP for Cell 1 +4dB)

		-		l .	
	Bands FDD_E, FDD_F Note 9		-		
	Bands FDD_G		-		
	Bands FDD_H		-		
	Bands TDD_A		-121		
	Bands TDD_C		-120	-	-
	Bands TDD_E		-119		
	Bands FDD_A		-		
	Bands FDD_B		-		
	Bands FDD_C		-	(1- 4 0	N
	Bands FDD_D		-		hannel 1 B+10log
	Bands FDD_E,				•
	FDD_F Note 9		-	(INRB channel2 /	N _{RB channel 1}))
	Bands FDD_G		-		
Note 4	Bands FDD_H		-		
lo Note 4		dBm/ BW _{channe} l	-87.76 +		
	Bands TDD_A		10log(N _{RB} ,		-
			_⊘ /50)		
			-86.76 +		
	Bands TDD_C		10log(N _{RB} ,		-
			<u>√50)</u>		
	Davids TDD F		-85.76 +		
	Bands TDD_E		10log(N _{RB,}		-
Propagat	ion condition		√50) AWGN	AWGN	AWGN
	Configuration		1x2	1x2	1x2
	fset to cell 1	us	-	0	3
Time aliq	nment error relative to	μο			
cell 1 Note	8	-	-	≤TAE	-
Note 1:	For special subframe a	nd uplink-downlink o	configurations	see Tables 4	2-1 and 4 2-2
11010 11	in TS 36.211.	ia apiiint aoviiinint c	ormgaranorio	000 100100 11	- 1 and 11-2
Note 2:	OCNG shall be used su	ch that all cells are	fully allocated	l and a constar	nt total
	transmitted power spec				
Note 3:	Interference from other				is assumed
	to be constant over sub	carriers and time ar	nd shall be mo	delled as AW	GN of
	j	V			
	appropriate power for				
Note 4:	Es/lot, RSRP and lo lev				or information
1	purposes. They are not settable parameters themselves.				
Note 5:					
Net- O	noise at each receiver antenna port.				
Note 6:	Note 6: The selection of the bands for testing depends on the configuration of the carrier				
Note 7:	aggregation supported by the UEs.				
Note 7: For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.					
Note 8:	Time alignment error (T			N clause 6 5 3	1 The TAE
NOLE O.	value depends upon the			ว _] ผลนอย ช.ฮ.ฮ	. I. IIIC IAE
Note 9:	E-UTRA operating band			n 3 5	
NOTE 3.	L-0 ITA operating band	i groups are as dell	neu in Section	1 J.J.	

A.9.1.23.3 Test Requirements

In the test, the performance of RSRP measurements is verified from following four perspectives:

- The absolute accuracy of intra-frequency RSRP measurements for Cell 1 on the primary component carrier shall fulfil the requirements defined in clause 9.1.11.1.
- The absolute accuracy of intra-frequency RSRP measurements for Cell 2 on the secondary component carrier shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of intra-frequency RSRP measurements for Cell 3 relative to Cell 2 on the secondary component carrier shall fulfil the requirements defined in clause 9.1.11.2.

- The relative accuracy of inter-frequency RSRP measurements between the primary and secondary component carriers for Cell 2 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.11.3.A.9.1.24 TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz + 10MHz

The test case in this section are applicable to carrier aggregation capable UEs which have been configured with a downlink Scell.

A.9.1.24.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.9.1.7.1.

A.9.1.24.2 Test parameters

The test parameters are the same except those described in the following section. The listed parameter values in Tables A.9.1.24.2-1 will replace the values of corresponding parameters in Tables A.9.1.7.2-1.

Table A.9.1.24.2-1: Carrier aggregation RSRP test parameters for TDD

Parameter		Unit	Test 1			
	rameter	Unit	Cell 1	Cell 2	Cell 3	
BW _{channel} Note 1	BW _{channel} Note 1		20	1	0	
Measurement band	width	n_{PRB}	47-52	22	-27	
PDSCH Reference defined in A.3.1.1.2	measurement channel		R.3 TDD	R.0 TDD	N/A	
PDSCH allocation		n_{PRB}	38-61	13-36	N/A	
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.2			R.10 TDD	R.6	TDD	
OCNG Patterns defined in A.3.2.2 (TDD)			OP.7 TDD	OP.1 TDD	OP.2 TDD	
	Bands TDD_A		-84.76			
	Bands TDD_C	dBm/18 MHz	-83.76	N/A		
Io ^{Note2}	Bands TDD_E		-82.76			
10	Bands TDD_A			(In for C	hannel 1	
	Bands TDD_C	dBm/9MHz	N/A	(Io for Channel 1 +2.33dB)		
	Bands TDD_E			12.0	oub)	
Note 1: This test	verifies the RRM requiren	nent which is indep	pendent of cha	annel bandwid	dth and is	
performed according to the principle defined in section A.3.6.1.						
Note 2: Io levels have been derived from other parameters for information purposes. They are not					ey are not	
settable parameters themselves.						
Note 3: See Tab	le A.9.1.7.2-1 for the other	r parameters.				

A.9.1.24.3 Test Requirements

The test requirements defined in section A.9.1.7.3 shall apply to this test case.

A.9.1.25 FDD intra-frequency absolute and relative RSRP accuracies in CRS based discovery signal

A.9.1.25.1 Test Purpose and Environment

The purpose of this test is to verify that the FDD RSRP absolute and relative measurement accuracies in CRS based discovery signal are within the specified limits. This test will verify the requirements in Sections 9.1.14.2.

A.9.1.25.2 Test parameters

In this test case, all cells are on the same carrier frequency. Both absolute and relative accuracies of RSRP intra frequency measurements are tested by using the parameters in Table A.9.1.25.2-1. In this test case, Cell 1 is the PCell and Cell 2 is the target cell. The Cell 2 DMTC configuration is provided to the UE in the *measDS-Config* before the start of the test.

Table A.9.1.25.2-1: RSRP FDD Intra frequency test parameters

De	vom ete v	l lmit	Tes	st 1
Parameter E-UTRA RF Channel Number		Unit	Cell 1	Cell 2
	annel Number	N.41.1		1
BW _{channel}		MHz	10	
Measurement b	pandwidth	n_{PRB}	22—27	
DTMC period		ms	N/A	160
DTMC period o			N/A	10
Time offset bet	al occasion duration	ms µs	N/A	.3
	nce measurement	μο	R.0	.5
channel defined			FDD	-
PDSCH allocat	PDSCH allocation		13—36	-
PDCCH/PCFIC	H/PHICH Reference	n_{PRB}		
	channel defined in		R.6	FDD
A.3.1.2.1				
	defined in A.3.2.1.1		OP.1	OP.2
FDD)	d A.3.2.1.2 (OP.2		FDD	FDD
PBCH_RA				
PBCH_RB]		
PSS_RA				
SSS_RA PCFICH RB				
PCFICH_RB PHICH_RA		<u> </u>		
PHICH_RB		dB	0	0
PDCCH_RA]		· ·
PDCCH_RB		j		
PDSCH_RA]		
PDSCH_RB				
OCNG_RA ^{Note1}		-		
OCNG_RB	Bands FDD A			
	Bands FDD B	-		
	Bands FDD_C			
$N_{oc}^{ m Note2}$	Bands FDD_D	dBm/15 kHz	-106	-106
	Bands FDD_E, FDD_F Note 5	dbiii/10 ki iz		100
	Bands FDD_G Note 7	-		
	Bands FDD_H	-		
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dР	2.5	6
$\mathbf{E}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	I	dB	2.5	-6
	Bands FDD_B	-		
	Bands FDD_B Bands FDD_C	-		
Note3	Bands FDD_D			
RSRP ^{Note3}	Bands FDD_F	dBm/15 kHz	-100	-105
	FDD F Note 5			
	Bands FDD_G Note 7			
	Bands FDD_H			
	Bands FDD_A	-		
	Bands FDD_B Bands FDD_C	1		
lo ^{Note3}	Bands FDD_D	dD=-/0.841.1	70.07	70.07
	Bands FDD E.	dBm/9 MHz	-70.27	-70.27
	FDD_F Note 5			
	Bands FDD_G Note 7			
A / 3 -	Bands FDD_H			
\hat{E}_s/N_{oc}		dB	6	1
Propagation co	ndition	-	AWGN	

Note 1:	OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
Note 2:	Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time
	and shall be modelled as AWGN of appropriate power for N_{oc}
	to be fulfilled.
Note 3:	RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
Note 4:	RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
Note 5:	For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.
Note 6:	E-UTRA operating band groups are as defined in Section 3.5.
Note 7:	Except Band 29 and Band 32.

A.9.1.25.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in sections 9.1.14.2.

A.9.1.26 TDD intra-frequency absolute and relative RSRP accuracies in CRS based discovery signal

A.9.1.26.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP absolute and relative measurement accuracies in CRS based discovery signal are within the specified limits. This test will verify the requirements in Sections 9.1.14.2.

A.9.1.26.2 Test parameters

In this test case all cells are on the same carrier frequency. Both absolute and relative accuracies of RSRP intra frequency measurements are tested by using the parameters in Table A.9.1.26.2-1. In this test case, Cell 1 is the PCell and Cell 2 is the target cell. The Cell 2 DMTC configuration is provided to the UE in the *measDS-Config* before the start of the test.

Table A.9.1.26.2-1: RSRP TDD Intra frequency test parameters

Par	Parameter		Te:	st 1 Cell 2
E-UTRA RF Ch	annel Number			1
BW _{channel}	annor rannor	MHz		0
Special subfran	ne			
configuration ^{Note1}			· ·	6
Uplink/downlink	configuration Note1		,	1
Measurement b	andwidth	n_{PRB}	22-	–27
DTMC period		ms	N/A	160
DTMC period of			N/A	10
	al occasion duration	ms	N/A	2
Time offset bety		μs		.3
	nce measurement		R.0	_
channel defined in A.3.1.1.2			TDD	
PDSCH allocati		n_{PRB}	13—36	-
PDCCH/PCFIC				
	surement channel		R.6	TDD
defined in A.3.1.2.2				
OCNG Patterns			OP.1	OP.2
A.3.2.2.1 (OP.1			TDD	TDD
A.3.2.2.2 (OP.2	(טטו)			
PBCH_RA				
PBCH_RB PSS_RA		1		
SSS_RA		_		
PCFICH_RB				
PHICH_RA				
PHICH_RB		dB	0	0
PDCCH_RA		uБ	0	U
PDCCH_RB		-		
PDSCH_RA				
PDSCH_RB				
OCNG_RA ^{Note2}				
OCNG_RB ^{Note2}				
	Bands TDD_A			
$N_{oc}^{ m Note3}$	Bands TDD_A Bands TDD_C	dBm/15 kHz	-106	-106
	Bands TDD_C	dDIII/13 KHZ	-100	-100
\hat{E}_{s}/I_{ot}	Danus IDD_L	dB	2.5	-6
s / ot	Bands TDD A		-	-
RSRP ^{Note4}	Bands TDD_A Bands TDD_C	dBm/15 kHz	-100	-105
KOKI	Bands TDD_E	UDIII/ 13 KI IZ	-100	-105
lo ^{Note4}	Bands TDD_A	-ID /O MIL!	70.07	70.07
IO TO	Bands TDD_C	dBm/9 MHz	-70.27	-70.27
	Bands TDD_E			
\hat{E}_s/N_{oc}		dB	6	1
Propagation co	ndition	-	AW	'GN

Note 1:	For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.
Note 2:	OCNG shall be used such that both cells are fully allocated and
	a constant total transmitted power spectral density is achieved
	for all OFDM symbols.
Note 3:	Interference from other cells and noise sources not specified in
	the test is assumed to be constant over subcarriers and time
	N
	and shall be modelled as AWGN of appropriate power for TY oc
	to be fulfilled.
Note 4:	RSRP and lo levels have been derived from other parameters
	for information purposes. They are not settable parameters
	themselves.
Note 5:	RSRP minimum requirements are specified assuming
	independent interference and noise at each receiver antenna
	port.
Note 6:	E-UTRA operating band groups are as defined in Section 3.5.

A.9.1.26.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in sections 9.1.14. 2.

A.9.1.27 FDD—FDD inter-frequency absolute and relative RSRP accuracies in CRS based discovery signal

A.9.1.27.1 Test Purpose and Environment

The purpose of this test is to verify that the CRS RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.14.2 for FDD—FDD inter frequency measurements.

A.9.1.27.2 Test parameters

In this set of test case the cells are on different carrier frequencies. Both absolute and relative accuracy of CRS RSRP inter-frequency measurements are tested by using the parameters in Table A.9.1.27.2-1. In this test case, Cell 1 is the PCell and Cell 2 the target cell. The inter frequency measurements are supported by a measurement gap and a DMTC configuation.

Table A.9.1.27.2-1: CRS RSRP FDD—FDD Inter frequency test parameters

Parameter		Unit	Test 1	
		Onit	Cell 1	Cell 2
E-UTRA RF Ch	annel Number		1	2
BW _{channel}		MHz	10	10
Gap Pattern Id			0	-
gapOffset		ms	9	160
DMTC period of	ffcot	ms	-	160
	al occasion duration	ms ms	-	10 1
Time offset bety		μs	-	3
Measurement b		•	22-	
	nce measurement	n_{PRB}		-21
channel defined			R.0 FDD	-
PDSCH allocati		$n_{{\it PRB}}$	13—36	-
PDCCH/PCFIC				
	surement channel		R.6 I	-DD
defined in A.3.1				
OCNG Patterns A.3.2.1.1 (OP.1			OP.1	OP.2
A.3.2.1.1 (OP.1 A.3.2.1.2 (OP.2			FDD	FDD
PBCH_RA	,			
PBCH_RB				
PSS_RA				
SSS_RA PCFICH_RB				
PHICH_RA				
PHICH_RB	PHICH_RB		0	0
PDCCH_RA				
PDCCH_RB				
	PDSCH_RA			
	PDSCH_RB			
OCNG_RA ^{Note1}				
OCNG_RB	Bands FDD_A			-115
	Bands FDD_B			-114.5
	Bands FDD C			-114
A 7 Note?	Bands FDD D		(N_{oc} for	-113.5
$N_{_{OC}}^{^{\mathrm{Note2}}}$	Bands FDD F	dBm/15 kHz		
	FDD_F Note 5	G.Z, 10	Channel 2	-113
	Bands FDD_G		+6dB)	112
	Note /			-112
Ê/I	Bands FDD_H	٩D	40	-111.5
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	13	-6
	Bands FDD_A			-121
	Bands FDD_B			-120.5
	Bands FDD_C		(5.55-	-120
RSRP ^{Note3}	Bands FDD_D	dBm/15 LU-	(RSRP for	-119.5
KOKP	Bands FDD_E, FDD_F Note 5	dBm/15 kHz	Cell 2 +25dB)	-119
	Bands FDD G		. 2005)	
	Note 7			-118
	Bands FDD_H			-117.5
	Bands FDD_A			-86.25
	Bands FDD_B			-85.75
	Bands FDD_C			-85.25
lo ^{Note3}	Bands FDD_D	alDino (C. NALL-	(lo for	-84.75
10	Bands FDD_E, FDD_F Note 5	dBm/9 MHz	Channel 2 +19.68dB)	-84.25
	Bands FDD_G			-83.25
	Bands FDD_H			-82.75

\hat{E}_s/N_{oc}		dB	13	-6		
Propagation	on condition	-	AW	GN		
Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.						
Note 2:	Interference from other ce the test is assumed to be	constant over su	bcarriers and	d time and		
	shall be modelled as AWO	GN of appropriate	e power for	v _{oc} to be		
Note 3:	fulfilled.					
Note 4:						
Note 5:						
Note 6:	E-UTRA operating band groups are as defined in Section 3.5. Except Band 29 and Band 32.					
Note 7: Note 8:	DMTC is provided to the UE the beginning of the test		<i>nfig</i> (in TS36.3	331) before		

A.9.1.27.3 Test Requirements

The CRS RSRP measurement accuracy shall fulfil the requirements in sections 9.1.14.2.

A.9.1.28 TDD—TDD inter-frequency absolute and relative RSRP accuracies in CRS based discovery signal

A.9.1.28.1 Test Purpose and Environment

The purpose of this test is to verify that the CRS RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.14.2 for TDD—TDD inter frequency measurements.

A.9.1.28.2 Test parameters

In this set of test case the cells are on different carrier frequencies. Both absolute and relative accuracy of CRS RSRP inter-frequency measurements are tested by using the parameters in Table A.9.1.28.2-1. In this test case, Cell 1 is the PCell and Cell 2 the target cell. The inter frequency measurements are supported by a measurement gap and a DMTC configuation.

Table A.9.1.28.2-1: CRS RSRP TDD—TDD Inter frequency test parameters

Parameter		Unit	Test	
		Onit	Cell 1	Cell 2
E-UTRA RF Ch	nannel Number		1	2
BW _{channel}		MHz	10	10
Special subfrar configuration No	ne e1		6	
I Inlink-downlin	c configuration Note1		1	
Gap Pattern Id	Configuration		0 -	
gapOffset		ms	9	
DMTC period		ms	-	160
DMTC period of	ffset	ms	-	10
Discovery signa	al occasion duration	ms	-	2
Time offset bet	ween cells	μs	-	3
Measurement b	pandwidth	n_{PRB}	22—27	
	PDSCH Reference measurement channel defined in A.3.1.1.2		R.0 TDD	-
PDSCH allocat	ion	n_{PRB}	13—36	-
PDCCH/PCFIC				
Reference mea defined in A.3.1	surement channel		R.6 TDD	
OCNG Patterns				
A.3.2.2.1 (OP.1	TDD) and		OP.1 TDD	OP.2
A.3.2.2.2 (OP.2	2 TDD)			TDD
PBCH_RA				
PBCH_RB				
PSS_RA				
SSS_RA				
PCFICH_RB				
PHICH_RA PHICH_RB		dB	0 0	0
PDCCH_RA		uБ		O
PDCCH_RB				
PDSCH_RA				
PDSCH RB				
OCNG_RA ^{Note2}				
OCNG_RB ^{Note2}				
	Bands TDD_A	dBm/15 kHz	(N_{oc} for Channel 2 +6dB)	-115
$N_{oc}^{ m Note3}$	Bands TDD_C			-114
	Bands TDD_E			-113
\hat{E}_{s}/I_{ot}		dB	13	-6
RSRP ^{Note4}	Bands TDD_A	dBm/15 kHz	(RSRP for Cell 2 +25dB)	-121
	Bands TDD_C			-120
	Bands TDD_E			-119
	Bands TDD_A	dBm/9 MHz	(lo for Channel 2 +19.68dB)	-86.25
Io ^{Note4}	Bands TDD_C			-85.25
	Bands TDD_E			-84.25
\hat{E}_s/N_{oc}		dB	13	-6
Propagation condition		-	AWGN	
Note 1: For special subframe and uplink-downlink configurations see				999

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

OCNG shall be used such that both cells are fully allocated and Note 2: a constant total transmitted power spectral density is achieved for all OFDM symbols.

Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and Note 3:

shall be modelled as AWGN of appropriate power for $N_{\it oc}$ to be fulfilled.

Note 4:	RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters
	themselves.
Note 5:	RSRP minimum requirements are specified assuming
	independent interference and noise at each receiver antenna
	port.
Note 6:	E-UTRA operating band groups are as defined in Section 3.5.
Note 7:	DMTC is provided to the UE in the measDS-Config (in
	TS36.331) before the beginning of test

A.9.1.28.3 Test Requirements

The CRS RSRP measurement accuracy shall fulfil the requirements in sections 9.1.14.2.

A.9.1.29 FDD intra frequency absolute and relative CSI-RSRP accuracies in CSI-RS based discovery signal

A.9.1.29.1 Test Purpose and Environment

The purpose of this test is to verify that the CSI- RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.14.3 for FDD intra frequency measurements.

A.9.1.29.2 Test parameters

In this set of test case all cells are on the same carrier frequencies. Both absolute and relative accuracy of CSI- RSRP intra frequency measurements are tested by using the parameters in Table A.9.1.29.2-1. In this test case, Cell 1 is the PCell and Cell 2 the target cell. The intra frequency measurements are supported by a DMTC configuration.

Table A.9.1.29.2-1: CSI-RSRP FDD Intra frequency test parameters

D		1111	Test 1	
Parameter		Unit	Cell 1	Cell 2
E-UTRA RF Ch	nannel Number		1	
BW _{channel}		MHz	10	
DMTC period	"	ms	16	
DMTC period o		ms	10	
	al occasion duration	ms	1	
CSI-RS resource	ce configuration	mo	2	4
CSI-RS periodi		ms ms	10 0	
CSI-RS individu		dB	0	0
CSI-RS muting		32	Enable	Enable
Time offset bet		μs	-	2.3
Measurement b	pandwidth	n_{PRB}	22—27	
PDSCH Refere	ence measurement		R.0 FDD	-
PDSCH allocat		n_{PRB}	13—36	_
		PKB	. 3 00	
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.1			R.6 FDD	
A.3.2.1.1 (OP.1	OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD) and		OP.1 FDD	OP.2 FDD
A.3.2.1.2 (OP.2	PFDD)		. 00	
PBCH_RA				
PBCH_RB				
PSS_RA SSS_RA				
PCFICH_RB				
PHICH_RA			0	0
PHICH_RB		dB		
PDCCH_RA				
PDCCH_RB				
PDSCH_RA				
PDSCH_RB				
OCNG_RA ^{Note1}				
OCNG_RB ^{Note1}			_	_
p-C-r10[2]	T	dB	6	6
	Bands FDD_A		-116	
	Bands FDD_B Bands FDD_C		-115.5	
	Bands FDD_C Bands FDD_D	dBm/15 kHz	-115 114.5	
$N_{_{OC}}^{^{Note2}}$	Bands FDD_B		-114.5	
	FDD_F Note 5		-114	
	Bands FDD_G		-113	
	Bands FDD H		-112.5	
$CRS \hat{E}_s/I_{ot}$		dB	0.46	-5.76
CSI-RS $\hat{\mathbf{E}}_{s}/\mathbf{I}_{\mathrm{ot}}$		dB	6.46	0.24
s / 2 of	Bands FDD_A		-113	-117
	Bands FDD_B		-112.5	-116.5
	Bands FDD_C		-112	-116
RSRP ^{Note3}	Bands FDD_D	dBm/15 kHz	-111.5	-115.5
	Bands FDD_E, FDD_F Note 5		-111	-115
	Bands FDD_G Note 7		-110	-114
	Bands FDD_H		-109.5	-113.5
	Bands FDD_A			
CSI-RSRP Note3	Bands FDD_B	dBm/15 kHz	(RSRP for Cell 1	(RSRP for Cell 2
COLKOKY	Bands FDD_C		+6dB)	+6dB)
	Bands FDD_D		. 005)	. 000)

	Bands FDD_E, FDD_F Note 5			
	Bands FDD_G Note 7			
	Bands FDD_H			
	Bands FDD_A		-82.43	
	Bands FDD_B		-81.93	
	Bands FDD_C		-81.43	
	Bands FDD_D		-80.93	
Io ^{Note3}	Bands FDD_E, FDD_F Note 5	dBm/9 MHz	-80.43	
	Bands FDD_G Note 7		-79.43	
	Bands FDD_H		-78.93	
CRS \hat{E}_{s}	CRS \hat{E}_s/N_{oc}		3	-1
CSI-RS	\hat{E}_s/N_{oc}	dB	9	5
Propagation	on condition	-	AWGN are fully allocated and a	
Note 2:	constant total transmitted power spectral density is achieved for all OFDM symbols. Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and			
shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. Note 3: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io levels are calculated in CRS symbols of				
measurement subframe. Note 4: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna				
port. Note 5: For Band 26, the tests shall be performed with the carrier frequency of assigned E-UTRA channel bandwidth within 865-894 MHz.				
Note 6:	E-UTRA operating band groups are as defined in Section 3.5.			
Note 7:				
Note 8:	DMTC is provided to the UE in the <i>measDS-Config</i> (in TS36.331) before the beginning of the test			

A.9.1.29.3 Test Requirements

The CSI- RSRP measurement accuracy shall fulfil the requirements in sections 9.1.14.3.

A.9.1.30 TDD intra frequency absolute and relative CSI-RSRP accuracies in CSI-RS based discovery signal

A.9.1.30.1 Test Purpose and Environment

The purpose of this test is to verify that the CSI- RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.14.3 for TDD intra frequency measurements.

A.9.1.30.2 Test parameters

In this set of test case all cells are on the same carrier frequencies. Both absolute and relative accuracy of CSI- RSRP intra frequency measurements are tested by using the parameters in Table A.9.1.30.2-1. In this test case, Cell 1 is the PCell and Cell 2 the target cell. The intra frequency measurements are supported by a DMTC configuation.

Table A.9.1.30.2-1: CSI-RSRP TDD Intra frequency test parameters

Parameter		Unit	Test 1	
Parameter		Offic	Cell 1 Cell 2	
	hannel Number		1	
BW _{channel}	. Note1	MHz	10	
Special subfram	e configuration Note1		6	
	configuration Note1		1	
DMTC period	-#+	ms	160	
DMTC period		ms	10	
	nal occasion duration rce configuration	ms	2	
CSI-RS resour		mo		4
CSI-RS subfra		ms ms	10 0	
CSI-RS individ		dB	0 0	
CSI-RS muting		ub_	Enable	Enable
Time offset be		μs	-	2.3
Measurement		n_{PRB}	22—27	
	ence measurement	PRB		
channel define			R.0 TDD	-
PDSCH alloca		n_{PRB}	13—36	-
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.1			R.6 TDD	
OCNG Pattern A.3.2.2.1 (OP. A.3.2.2.2 (OP.	1 TDD) and		OP.1 TDD	OP.2 TDD
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RA OCNG_RB POCNG_RB		dB	0	0
p-C-r10[2]	1	dB	6	6
λ/ Note3	Bands TDD_A		-11	
$N_{oc}^{ m Note3}$	Bands TDD_C	dBm/15 kHz	-115	
. ,	Bands TDD_E		-1 ⁻	14
${\sf CRS}\hat{E}_{_{s}}/I_{_{ m ot}}$		dB	0.46	-5.76
CSI-RS $\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{c}}}$		dB	6.46	0.24
	Bands TDD_A		-113	-117
RSRP ^{Note3}	Bands TDD_C	dBm/15 kHz	-112	-116
	Bands TDD_E		-111	-115
CSI-RSRP Note3	Bands TDD_A	dBm/15 kHz	(RSRP	(RSRP
	Bands TDD_C Bands TDD_E		for Cell 1	for Cell 2
	Bands TDD_E Bands TDD_A		+6dB) +6dB)	
lo ^{Note3}	Bands TDD_C	dBm/9 MHz	-82.43 -81.43	
10	Bands TDD_E		-80	
				3
CRS \hat{E}_s/N_{oc}		dB	3	-1
CSI-RS \hat{E}_s/N_{oc}		dB	9	5
Propagation con			AWGN	
Note 1: For special subframe and uplink-downlink configurations see				

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 2: OCNG shall be used such that both cells are fully allocated and a

	constant total transmitted power spectral density is achieved for all OFDM symbols.
Note 3:	Interference from other cells and noise sources not specified in
	the test is assumed to be constant over subcarriers and time and
	N _a
	shall be modelled as AWGN of appropriate power for $^{N_{oc}}$ to be
	fulfilled.
Note 4:	RSRP and lo levels have been derived from other parameters for
	information purposes. They are not settable parameters
	themselves. Io levels are calculated in CRS symbols of
	measurement subframe.
Note 5:	RSRP minimum requirements are specified assuming
Note 5.	
	independent interference and noise at each receiver antenna
	port.
Note 6:	E-UTRA operating band groups are as defined in Section 3.5.
Note 7:	DMTC is provided to the UE in the measDS-Config (in TS36.331) before
1	the beginning of the test.

A.9.1.30.3 Test Requirements

The CSI-RSRP measurement accuracy shall fulfil the requirements in sections 9.1.14.3.

A.9.1.31 FDD—FDD inter-frequency absolute and relative CSI-RSRP accuracies in CSI-RS based discovery signal

A.9.1.31.1 Test Purpose and Environment

The purpose of this test is to verify that the CSI-RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.14.3 for FDD—FDD inter frequency measurements.

A.9.1.31.2 Test parameters

In this set of test case the cells are on different carrier frequencies. Both absolute and relative accuracy of CSI-RSRP inter-frequency measurements are tested by using the parameters in Table A.9.1.31.2-1. In this test case, Cell 1 is the PCell and Cell 2 the target cell. The inter frequency measurements are supported by a measurement gap and two DMTC configurations which one is for cell1 and the other is for cell2.

Table A.9.1.31.2-1: CSI-RSRP FDD—FDD Inter frequency test parameters

Parameter		11	Test 1	
		Unit	Cell 1	Cell 2
E-UTRA RF Channel Number			1	2
BW _{channel}		MHz	10	10
Gap Pattern Id			0	-
gapOffset		ms	9	4.00
DMTC period	tt 1	ms	160	160
DMTC period offset		ms	0	10
Discovery signal occasion duration CSI-RS resource configuration		ms	2	<u>1</u>
	Ŭ	mc		0
CSI-RS periodicity		ms	(
CSI-RS subframe offset		ms dB	0	0
CSI-RS individual offset[2] CSI-RS muting		uВ	Enable	Enable
Time offset between cells		μs	-	3
Measurement b		n_{PRB}	22-	
	nce measurement	PRB		
channel defined			R.0 FDD	-
PDSCH allocati	-	$n_{{\it PRB}}$	13—36	-
defined in A.3.1	surement channel .2.1		R.6	FDD
OCNG Patterns A.3.2.1.1 (OP.1 A.3.2.1.2 (OP.2	FDD) and		OP.1 FDD	OP.2 FDD
PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RA PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RA OCNG_RB NOTET	PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RB OCNG_RA Note1		0	0
p-C-r10[2]		dB	0	6
N_{oc} Note2	Bands FDD_A Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 5 Bands FDD_G Note 7 Bands FDD_H	dBm/15 kHz	(N_{oc} for Channel 2 +6dB)	-115 -114.5 -114 -113.5 -113 -112 -111.5
CRS $\hat{ ext{E}}_{ ext{s}}/ ext{I}_{ ext{ot}}$		dB	13	-6
CSI-RS $\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$		dB	13	0
RSRP ^{Note3}	Bands FDD_A Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 5 Bands FDD_G Note 7 Bands FDD_H	dBm/15 kHz	(RSRP for Cell 2 +25dB)	-121 -120.5 -120 -119.5 -119 -118 -117.5

	Bands FDD_A	dBm/15 kHz	(RSRP for Cell 1	(RSRP for Cell 2		
	Bands FDD B		+0dB)	+6dB)		
	Bands FDD_B Bands FDD_C					
CSI-RSRP Note3	Bands FDD_C					
CSI-RSRP	Bands FDD E.					
	FDD_F Note 5					
	Bands FDD_G					
	Bands FDD_H					
	Bands FDD_A			-86.25		
	Bands FDD_B			-85.75		
	Bands FDD_C			-85.25		
	Bands FDD_D		(lo for	-84.75		
Io ^{Note3}	Bands FDD_E, FDD_F Note 5	dBm/9 MHz	Channel 2 +19.68dB)	-84.25		
	Bands FDD_G Note 7			-83.25		
	Bands FDD_H			-82.75		
${ m CRS}\hat{E}_s/N_{oc}$		dB	13	-6		
CSI-RS \hat{E}_s/Λ	I_{oc}	dB	13	0		
Propagation con		-	- AWGN			
cons all C Note 2: Inter	NG shall be used such stant total transmitted PFDM symbols. ference from other co est is assumed to be	power spectral of the power spectral of the	density is acl urces not sp	nieved for ecified in		
Note 3: RSF infor then	shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. Note 3: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io levels are calculated in CRS symbols of					
measurement subframe. Note 4: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.						
Note 5: For Band 26, the tests shall be performed with the carrier frequency of assigned E-UTRA channel bandwidth within 865-894 MHz.						
	TRA operating band of		fined in Sect	ion 3.5.		
	ept Band 29 and Band					
	C is provided to the UE reginning of the test	in the measDS-C	onfig (in TS36.	.331) before		

A.9.1.31.3 Test Requirements

The CSI-RSRP measurement accuracy shall fulfil the requirements in sections 9.1.14.3.

A.9.1.32 TDD—TDD inter-frequency absolute and relative CSI-RSRP accuracies in CSI-RS based discovery signal

A.9.1.32.1 Test Purpose and Environment

The purpose of this test is to verify that the CSI-RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.14.3 for TDD—TDD inter frequency measurements.

A.9.1.32.2 Test parameters

In this set of test case the cells are on different carrier frequencies. Both absolute and relative accuracy of CSI-RSRP inter-frequency measurements are tested by using the parameters in Table A.9.1.32.2-1. In this test case, Cell 1 is the PCell and Cell 2 the target cell. The inter frequency measurements are supported by a measurement gap and two DMTC configurations which one is for cell 1 and the other is for cell2.

Table A.9.1.32.2-1: CSI-RSRP TDD—TDD Inter frequency test parameters

			Took 4		
Par	ameter	Unit	Cell 1	t 1 Cell 2	
E-UTRA RF Ch	annel Number		Cell 1	2	
BW _{channel}		MHz	10	10	
Special subfran	ne		6	•	
configuration ^{Not}	e1				
	configuration Note1		0		
Gap Pattern Id gapOffset		ms	9	-	
DMTC period		ms	160	160	
DMTC period o		ms	0	10	
	al occasion duration	ms	2	2	
CSI-RS resource		ma	2 10	4	
CSI-RS periodic		ms ms	0		
CSI-RS individu		dB	0 1	0	
CSI-RS muting			Enable	Enable	
Time offset bety	ween cells	μs	-	3	
Measurement b		n_{PRB}	22—	-27	
PDSCH Refere channel defined	nce measurement d in A.3.1.1.2		R.0 TDD	-	
PDSCH allocati		n_{PRB}	13—36	-	
defined in A.3.1	surement channel .2.2		R.6 T	DD.	
OCNG Patterns A.3.2.2.1 (OP.1 A.3.2.2.2 (OP.2	TDD) and		OP.1 TDD	OP.2 TDD	
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RA OCNG_RA OCNG_RA OCNG_RA OCNG_RA OCNG_RA OCNG_RA OCNG_RA OCNG_RA OCNG_RA OCNG_RA OCNG_RA OCNG_RA OCNG_RA OCNG_RA		dB	0	0	
p-C-r10[2]		dB	0	6	
$N_{oc}^{ m Note3}$	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/15 kHz	$(N_{oc} \text{ for } Channel 2 +6dB)$	-115 -114 -113	
$CRS \hat{E}_{s}/I_{ot}$	Danido IDD_L	dB	13	-6	
CSI-RS \hat{E}_s/I_{ot}		dB	13	0	
s / ot	Bands TDD_A			-121	
RSRP ^{Note4}	Bands TDD C	dBm/15 kHz	(RSRP for Cell 2	-120	
	Bands TDD_E		+25dB)	-119	
Bands TDD_A		dBm/15 kHz		110	
		GDIII/ IO KI IZ	(RSRP for	(RSRP	
Note3	Note3 Bands IDD_C		Cell 1 +0dB)	for Cell 2 +6dB)	
	Bands TDD_E		/	<u> </u>	
Note 4	Bands TDD_A		(lo for	-86.25	
Io ^{Note4}	Bands TDD_C	dBm/9 MHz	Channel 2	-85.25	
	Bands TDD_E		+19.68dB)	-84.25	

CRS \hat{E}_s /	N_{oc}	dB	13	-6
CSI-RS	\hat{E}_s/N_{oc}	dB	13	0
Propagat	ion condition	-	AWG	N
Note 1:	For special subframe and Tables 4.2-1 and 4.2-2 in		onfigurations	see
Note 2:	OCNG shall be used such constant total transmitted all OFDM symbols.			
Note 3:	the 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and			
Note 4:	shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. 1: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io levels are calculated in CRS symbols of			
Note 5:	measurement subframe. RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.			
Note 6: Note 7:	E-UTRA operating band of DMTC is provided to the before the beginning of te	JE in the measDS	ned in Section -Config (in T	n 3.5. S36.331)

A.9.1.32.3 Test Requirements

The CSI-RSRP measurement accuracy shall fulfil the requirements in sections 9.1.14.3.

A.9.1.33 FDD absolute and relative RSRP accuracies for E-UTRAN Carrier Aggregation in CRS based discovery signal

A.9.1.33.1 Test Purpose and Environment

The purpose of this test is to verify that the FDD RSRP absolute and relative measurement accuracies in carrier aggregation in CRS based discovery signal are within the specified limits. This test will verify the absolute RSRP accuracy requirement of the secondary component carrier defined in clause 9.1.15.1.2, and the relative RSRP accuracy requirement of the secondary component carrier defined in clause 9.1.15.1.2. The test will also verify the primary and secondary component carrier relative RSRP accuracy requirement defined in Clause 9.1.15.1.3.

A.9.1.33.2 Test parameters

In this test case, Cell1 is PCell on the primary component carrier, Cell2 is SCell on the secondary component carrier and activated, and Cell3 is the neighboring cell on the secondary component carrier. The test parameters are given in Table A.9.1.33.2-1. The Cell 3 DMTC configuration is provided to the UE in the *measDS-Config* before the start of the test.

Table A.9.1.33.2-1: RSRP FDD carrier aggregation test parameters

Pai	rameter	Unit	0.11.4	Test 1	0.110
E LITEA DE OL	1.51		Cell 1	Cell 2	Cell3
E-UTRA RF Ch	nannel Number		1	2	2
BW _{channel}		MHz	10	10	10
DMTC period		ms	N/A	N/A	160
DMTC period o			N/A	N/A	10
Discovery signal occasion duration		ms	N/A	N/A	1
Timing offset to	cell1	μs	-	0	3
Time alignment error between cell 2 and cell 1			-	≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1.	-
Measurement b		n_{PRB}		22—27	
PDSCH Refere channel defined	nce measurement d in A.3.1.1.1		R.0 FDD	R.0 FDD	-
PDSCH allocat		n_{PRB}	13—36	13—36	-
defined in A.3.1	surement channel			R.6 FDD	I
OCNG Patterns A.3.2.1.1 (OP.1 A.3.2.1.2 (OP.2	FDD) and		OP.1 FDD	OP.1 FDD	OP.2 FDD
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RANote	e1	dB	0	0	0
$N_{oc}^{$	Bands FDD_A Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 6 Bands FDD_G Bands FDD_G Bands FDD_H	dBm/15 kHz	-117 -116.5 -116 -115.5 -115 -114 -113.5	(N_{oc} for Ch	annel 1 +1dB)
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	-4	0.46	-5.76
RSRP ^{Note3}	Bands FDD_A Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 6 Bands FDD_G Bands FDD_G Bands FDD_H	dBm/15 kHz	-121 -120.5 -120 -119.5 -119 -118 -117.5	(RSRP for Cell 1 +8dB)	(RSRP for Cell 1 +4dB)
Io ^{Note3}	Bands FDD_A Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 6	dBm/9 MHz	-87.76 -86.26 -86.76 -86.26 -85.76	(lo for Chanr	nel 1 +5.33dB)

	Bands FDD_G		-84.76		
	Bands FDD_H		-84.26		
\hat{E}_s/N_{oc}		dB	-4	3	-1
Propagat	ion condition	-		AWGN	
Note 1: Note 2:	OCNG shall be used such transmitted power spectra Interference from other ce to be constant over subca	al density is achievells and noise sour	ed for all OFI rces not speci	DM symbols. ified in the test	t is assumed
	appropriate power for N_{o}	$_{c}$ to be fulfilled.			
Note 3:	RSRP and lo levels have purposes. They are not se		•		mation
Note 4:	RSRP minimum requirem noise at each receiver and	ents are specified			erference and
Note 5:	The selection of the band aggregation supported by	• .	nds on the co	nfiguration of t	he carrier
Note 6:					the assigned
Note 7:	This test verifies the RRM and is performed according				el bandwidth
Note 8:	E-UTRA operating band g				

A.9.1.33.3 Test Requirements

In the test, the performance of RSRP measurements is verified from following three perspectives:

- The absolute accuracy of intra-frequency RSRP measurements for Cell 3 on the secondary component carrier shall fulfil the requirements defined in clause 9.1.15.1.2.
- The relative accuracy of intra-frequency RSRP measurements for Cell 3 relative to Cell 2 on the secondary component carrier shall fulfil the requirements defined in clause 9.1.15.1.2
- The relative accuracy of inter-frequency RSRP measurements between the primary and secondary component carriers for Cell 3 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.15.1.3.

A.9.1.34 TDD absolute and relative RSRP accuracies for E-UTRAN Carrier Aggregation in CRS based discovery signal

A.9.1.34.1 Test Purpose and Environment

The purpose of this test is to verify that the TDD RSRP absolute and relative measurement accuracies in carrier aggregation in CRS based discovery signal are within the specified limits. This test will verify the absolute RSRP accuracy requirement of the secondary component carrier defined in clause 9.1.15.1.2, and the relative RSRP accuracy requirement of the secondary component carrier defined in clause 9.1.15.1.2. The test will also verify the primary and secondary component carrier relative RSRP accuracy requirement defined in Clause 9.1.15.1.3.

A.9.1.34.2 Test parameters

In this test case, Cell1 is PCell on the primary component carrier, Cell2 is SCell on the secondary component carrier and activated, and Cell3 is the neighboring cell on the secondary component carrier. The test parameters are given in Table A.9.1.34.2-1. The Cell 3 DMTC configuration is provided to the UE in the *measDS-Config* before the start of the test.

Table A.9.1.34.2-1: Carrier aggregation RSRP test parameters for TDD

Parameter	Unit	Test 1			
	Unit	Cell 1	Cell 2	Cell 3	
E-UTRA RF Channel Number		1	2	2	
BW _{channel}	MHz	10	10	10	
DMTC period	ms	N/A	N/A	160	
DMTC period offset		N/A	N/A	10	
Discovery signal occasion duration	ms	N/A	N/A	2	
Special subframe configuration Note1			6		
Uplink/downlink configuration ^{Note1}			1		
Timing offset to Cell 1	μs	-	0	3	
Time alignment error between cell 2 and cell 1	ı	-	≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1	-	
Measurement bandwidth	n_{PRB}		22—27		
PDSCH Reference measurement channel defined in A.3.1.1.2		R.0 TDD	R.0 TDD	-	
PDSCH allocation	n_{PRB}	13—36	13—36	-	
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.2		R.6 TDD			
OCNG Patterns defined in A.3.2.2.1 (OP.1					
TDD) and A.3.2.2.2 (OP.2 TDD)		OP.1 TDD	OP.1 TDD	OP.2 TDD	
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RA OCNG_RB Note2 Bands TDD_A	dB	-117	0	0	
N _{oc} Note3 Bands TDD_C Bands TDD_E	dBm/15 kHz	-116 -115	(N_{oc} for +10	Channel 1 dB)	
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	-4	0.5	-5.76	
RSRP ^{Note4} Bands TDD_A Bands TDD_C Bands TDD_E Bands TDD_A	dBm/15 kHz	-121 -120 -119 -87.76	(RSRP for Cell 1 +8dB)	(RSRP for Cell 1 +4dB)	
Io ^{Note4} Bands TDD_C Bands TDD_E	dBm/9 MHz	-86.76 -85.76	(lo for C +5.3	hannel 1 3dB)	
1 4 /					
\hat{E}_s/N_{oc}	dB	-4	3	-1	

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power

for $^{IV}{}^{oc}$ to be fulfilled.

Note 4: RSRP and lo levels have been derived from other parameters for information purposes.

	They are not settable parameters themselves.
Note 5:	RSRP minimum requirements are specified assuming independent interference and noise
	at each receiver antenna port.
Note 6:	The selection of the bands for testing depends on the configuration of the carrier
	aggregation supported by the UEs.
Note 7:	This test verifies the RRM requirement which is independent of channel bandwidth and is
	performed according to the principle defined in section A.3.6.1.
Note 8:	E-UTRA operating band groups are as defined in Section 3.5.

A.9.1.34.3 Test Requirements

In the test, the performance of RSRP measurements is verified form following three perspectives:

- The absolute accuracy of intra-frequency RSRP measurements for Cell 3 on the secondary component carrier shall fulfil the requirements defined in clause 9.1.15.1.2.
- The relative accuracy of intra-frequency RSRP measurements for Cell 3 relative to Cell 2 on the secondary component carrier shall fulfil the requirements defined in clause 9.1.15.1.2
- The relative accuracy of inter-frequency RSRP measurements between the primary and secondary component carriers for Cell 3 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.15.1.3.

A.9.1.35 FDD absolute and relative CSI-RSRP accuracies for E-UTRAN Carrier Aggregation in CSI-RS based discovery signal

A.9.1.35.1 Test Purpose and Environment

The purpose of this test is to verify that the FDD CSI-RSRP absolute and relative accuracy requirements in carrier aggregation are within the specified limits. This test will verify the absolute CSI-RSRP accuracy requirements of the primary component carrier defined in clause 9.1.15.2.1, the absolute CSI-RSRP accuracy requirements of the secondary component carrier defined in clause 9.1.15.2.2, and the relative CSI-RSRP accuracy requirements of the secondary component carrier defined in clause 9.1.15.2.2. The test will also verify the primary and secondary component carrier relative CSI-RSRP accuracy requirement defined in Clause 9.1.15.2.3.

A.9.1.35.2 Test parameters

In this set of cases cell1 is PCell on the primary component carrier, cell2 is SCell on the secondary component carrier and activated, and cell3 is the neighboring cell on the secondary component carrier. The test parameters are given in Table A.9.1.35.2-1. This set is supported by two DMTC configurations which one is for cell1 and the other is for cell2 and cell3.

Table A.9.1.35.2-1: CSI-RSRP FDD carrier aggregation test parameters

			1	T 44	
Para	ameter	Unit	Cell 1	Test 1 Cell 2	Cell3
E-UTRA RF Cha	annel Number		1	2	2
BW _{channel}	annei Number	MHz	10	10	10
	coll1		-	0	3
Timing offset to cell1 Time alignment error between cell 2 and cell 1		<u>μ</u> s	-	≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1.	-
DMTC period		ms	160		60
DMTC period of	fset	ms	0	1	10
Discovery signa	l occasion duration	ms	1		1
CSI-RS resourc	e configuration		2	4	6
CSI-RS periodic	city	ms	10	10	10
CSI-RS subfram	ne offset	ms	0	0	0
CSI-RS individu	al offset[2]	dB	0	0	0
CSI-RS muting			Enable	Enable	Enable
Measurement b	andwidth	n_{PRB}		22—27	
PDSCH Referer channel defined	nce measurement in A.3.1.1.1		R.0 FDD	R.0 FDD	-
PDSCH allocation	on	$n_{\it PRB}$	13—36	13—36	-
defined in A.3.1	surement channel .2.1	TID		R.6 FDD	
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD) and A.3.2.1.2 (OP.2 FDD)			OP.1 FDD	OP.1 FDD	OP.2 FDD
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RANote		dB	0	0	0
p-C-r10[2]		dB	6	6	6
$N_{oc}^{$	Bands FDD_A Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 6 Bands FDD_G Bands FDD_G Bands FDD_H	dBm/15 kHz	-117 -116.5 -116 -115.5 -115 -114 -113.5	(N_{oc} for Ch	annel 1 +1dB)
${\sf CRS}\hat{{ m E}}_{_{ m s}}/{ m I}_{_{ m ot}}$		dB	-4	0.46	-5.76
CSI-RS $\hat{E}_{_{s}}/I_{_{ot}}$		dB	2	6.46	0.24
RSRP ^{Note3}	Bands FDD_A Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 6	dBm/15 kHz	-121 -120.5 -120 -119.5 -119	(RSRP for Cell 1 +8dB)	(RSRP for Cell 1 +4dB)

Bands FDD_G

-118

		Bands FDD_H		-117.5		
		Bands FDD_A		-115		
		Bands FDD_B		-114.5		
		Bands FDD_C		-114	(CSI-	(CCL DCDD
CSI-	CSI- RSRP ^{Note3}	Bands FDD_D	dBm/15 kHz	-113.5	RSRP for	(CSI-RSRP for Cell 1
RSRP ^{Note}		Bands FDD_E,	UDIII/13 KHZ	-113	Cell 1	+4dB)
		FDD_F Note 6			+8dB)	1 100)
		Bands FDD_G		-112		
		Bands FDD_H		-111.5		
		Bands FDD_A		-87.76		
		Bands FDD_B		-87.26		
		Bands FDD_C		-86.76		
Io ^{Note3}		Bands FDD_D	dBm/9 MHz	-86.26	(lo for Chann	nel 1 +5.33dB)
		Bands FDD_E, FDD_F Note 6	abiliyo ivii iz	-85.76	(10 101 Offarmer 1 70.00ul	
		Bands FDD_G		-84.76		
		Bands FDD_H		-84.26		
CRS \hat{E}_{s} ,	$/N_{oc}$		dB	-4	3	-1
CSI-RS	\hat{E}_s/N	ос	dB	2	9	5
Propagat	tion co	ndition	-		AWGN	
Note 1:		IG shall be used such	n that both cells ar	e fully allocat	ed and a cons	tant total
		smitted power spectra				
Note 2:		ference from other ce				
	to be	constant over subca	arriers and time an	id shall be mo	odelled as AW	GN of
	appr	opriate power for $N_{_{\scriptscriptstyle O}}$	to be fulfilled.			
Note 3:	RSR	P and lo levels have	been derived from	n other param	eters for inform	mation
		oses. They are not se				
		symbols of measure				
Note 4:		P minimum requirem		assuming in	dependent inte	rference and
	noise at each receiver antenna port.					
Note 5:	The	selection of the band	s for testing deper	nds on the co	nfiguration of t	he carrier
	aggregation supported by the UEs.					
Note 6:	For Band 26, the tests shall be performed with the carrier frequency of the assigned					
11010 0.					r frequency of	the assigned
Note 7:	E-U1	Band 26, the tests sh FRA channel bandwic test verifies the RRM	dth within 865-894	MHz.		•

A.9.1.35.3 Test Requirements

beginning of the test.

Note 8:

Note9:

In the test, the performance of CSI-RSRP measurements is verified from following four perspectives:

- The absolute accuracy of intra-frequency CSI-RSRP measurements for Cell 1 on the primary component carrier shall fulfil the requirements defined in clause 9.1.15.2.1.
- The absolute accuracy of intra-frequency CSI-RSRP measurements for Cell 2 on the secondary component carrier shall fulfil the requirements defined in clause 9.1.15.2.2.

and is performed according to the principle defined in section A.3.6.1.

DMTC configurations are provided to the UE in the measDS-Config (in TS36.331) before the

E-UTRA operating band groups are as defined in Section 3.5.

- The relative accuracy of intra-frequency CSI-RSRP measurements for Cell 3 relative to Cell 2 on the secondary component carrier shall fulfil the requirements defined in clause 9.1.15.2.2.
- The relative accuracy of inter-frequency CSI-RSRP measurements between the primary and secondary component carriers for Cell 2 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.15.2.3.

A.9.1.36 TDD absolute and relative CSI-RSRP accuracies for E-UTRAN Carrier Aggregation in CSI-RS based discovery signal

A.9.1.36.1 Test Purpose and Environment

The purpose of this test is to verify that the TDD CSI-RSRP absolute and relative accuracy requirements in carrier aggregation are within the specified limits. This test will verify the absolute CSI-RSRP accuracy requirements of the primary component carrier defined in clause 9.1.15.2.1, the absolute CSI-RSRP accuracy requirements of the secondary component carrier defined in clause 9.1.15.2.2, and the relative CSI-RSRP accuracy requirements of the secondary component carrier defined in clause 9.1.15.2.2. The test will also verify the primary and secondary component carrier relative CSI-RSRP accuracy requirement defined in Clause 9.1.15.2.3.

A.9.1.36.2 Test parameters

In this set of cases cell1 is PCell on the primary component carrier, cell2 is SCell on the secondary component carrier and activated, and cell3 is the neighboring cell on the secondary component carrier. The test parameters are given in Table A.9.1.36.2-1. This set is supported by two DMTC configurations which one is for cell1 and the other is for cell2 and cell3.

Table A.9.1.36.2-1: CSI-RSRP TDD carrier aggregation test parameters

	aramatar.	l lmit		Test 1	
	arameter	Unit	Cell 1	Cell 2	Cell 3
E-UTRA RF Chann	el Number		1	· · ·	
BW _{channel}	Note1	MHz		10	
Special subframe c	ontiguration Note1			6	
Uplink/downlink cor				0	
Timing offset to Ce	II I	μs	-	-	3
Time alignment error between cell 2 and cell 1			-	≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1	-
DMTC period		ms	160		60
DMTC period offset		ms	0		0
Discovery signal of CSI-RS resource of		ms	2	4	6
CSI-RS periodicity	orniguration	ms	10	10	10
CSI-RS subframe of	offset	ms	0	0	0
CSI-RS individual of		dB	0	0	0
CSI-RS muting		<u>, , , , , , , , , , , , , , , , , , , </u>	Enable	Enable	Enable
Measurement band	lwidth	n_{PRB}		22—27	
PDSCH Reference defined in A.3.1.1.2	measurement channel		R.0 TDD	R.0 TDD	-
PDSCH allocation		n_{PRB}	13—36	13—36	-
PDCCH/PCFICH/P measurement chan	HICH Reference nel defined in A.3.1.2.2		R.6 TDD		
	fined in A.3.2.2.1 (OP.1		OP.1 TDD	OP.1 TDD	OP.2 TDD
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RA PDCCH_RA PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RA OCNG_RA OCNG_RB OCNG_RB		dB	0	0	0
p-C-r10[2]		dB	6	6	6
$N_{oc}^{ m Note3}$	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/15 kHz	-117 -116 -115	(N_{oc} for +10	Channel 1 dB)
${\sf CRS}\hat{E}_{_{ m s}}/I_{_{ m ot}}$	<u> </u>	dB	-4	0.46	-5.76
CSI-RS $\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$		dB	2	6.46	0.24
RSRP ^{Note4}	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/15 kHz	-121 -120 -119	(RSRP for Cell 1 +8dB)	(RSRP for Cell 1 +4dB)
CSI-RSRP ^{Note4}	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/15 kHz	-115 -114 -113	(CSI- RSRP for Cell 1 +8dB)	(CSI- RSRP for Cell 1 +4dB)
Io ^{Note4}	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/9 MHz	-87.76 -86.76 -85.76	(lo for C	•

$CRS\hat{E}_s$ /	N_{oc}	dB	-4	3	-1
CSI-RS É	\hat{E}_s/N_{oc}	dB	2	9	5
Propagation condition - AWGN					
Note 1:	For special subframe and uplink-down 36.211.	nlink configuration	ons see Table	es 4.2-1 and 4	1.2-2 in TS
Note 2:	OCNG shall be used such that both of power spectral density is achieved for	•		constant total	transmitted
Note 3: Interference from other cells and noise sources not specified in the test is assumed to constant over subcarriers and time and shall be modelled as AWGN of appropriate po					
	for N_{oc} to be fulfilled.				
Note 4:	RSRP and Io levels have been derive They are not settable parameters the measurement subframe.	•		•	•
Note 5:	RSRP minimum requirements are speat each receiver antenna port.	ecified assuming	g independen	t interference	and noise
Note 6:	The selection of the bands for testing aggregation supported by the UEs.	depends on the	configuration	of the carrie	r
Note 7:		ent which is independent of channel bandwidth and is			
Note 8:	E-UTRA operating band groups are as de				
Note9:	DMTC configurations are provided to the lof the test	JE in the <i>measDS</i>	S-Config (in TS3	36.331) before	the beginning

A.9.1.36.3 Test Requirements

In the test, the performance of CSI-RSRP measurements is verified from following four perspectives:

- The absolute accuracy of intra-frequency CSI-RSRP measurements for Cell 1 on the primary component carrier shall fulfil the requirements defined in clause 9.1.15.2.1.
- The absolute accuracy of intra-frequency CSI-RSRP measurements for Cell 2 on the secondary component carrier shall fulfil the requirements defined in clause 9.1.15.2.2.
- The relative accuracy of intra-frequency CSI-RSRP measurements for Cell 3 relative to Cell 2 on the secondary component carrier shall fulfil the requirements defined in clause 9.1.15.2.2.
- The relative accuracy of inter-frequency CSI-RSRP measurements between the primary and secondary component carriers for Cell 2 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.15.2.3.

A.9.1.37 3 DL PCell in FDD RSRP for E-UTRAN in Carrier Aggregation

A.9.1.37.1 Test Purpose and Environment

The purpose of this test is to verify that the TDD-FDD RSRP absolute and relative accuracy requirements in carrier aggregation with PCell in FDD are within the specified limits. This test will verify the absolute RSRP accuracy requirements of the primary component carrier defined in clause 9.1.11.1, the absolute RSRP accuracy requirements of the secondary component carriers defined in clause 9.1.11.2, and the relative RSRP accuracy requirements of the secondary component carriers defined in clause 9.1.11.2. The test will also verify the primary and secondary component carriers' relative RSRP accuracy requirement defined in Clause 9.1.11.3.

A.9.1.37.2 Test parameters

In this set of cases cell 1 is PCell on the primary component carrier, and cell 2 and cell 4 are activated SCells on secondary component carriers SCC1 and SCC2 respectively. Cell 3 and cell 5 are neighbouring cells on secondary component carriers SCC1 and SCC2 respectively. The test parameters are given in Table A.9.1.37.2-1.

Table A.9.1.37.2-1: 3 Downlink PCell in FDD RSRP carrier aggregation test parameters

	ameter	Unit	Cell 1	Cell 2	Cell 3	Cell 4	Cell 5
E-UTRA RF	Channel Number		1	2			3
BW _{channel}		MHz	$5 \text{MHz:} \\ N_{\text{RB,c}} = 25 \\ 10 \text{MHz:} \\ N_{\text{RB,c}} = 50 \\ 20 \text{MHz:} \\ N_{\text{RB,c}} = 100$	5MHz: N _F 10MHz: N 20MHz: N _F	$_{RB,c} = 50$	5MHz: N _{RB,c} = 25 10MHz: N _{RB,c} = 50 20MHz: N _{RB,c} = 100	
Special subfi	ame		-	6			6
configuration Uplink/downl configuration	ink		-	1			1
Measuremer		n_{PRB}	5MHz: 10-15 10MHz: 22-27 20MHz: 47-52	5MHz: 10MHz: 20MHz:	22-27	5MHz: 10-15 10MHz: 22-27 20MHz: 47-52	
PDSCH Refe measuremer defined in A.	nt channel		5MHz: R.5 FDD 10MHz: R.0 FDD 20MHz: R.4 FDD	5MHz: R.4 TDD 10MHz: R.0 TDD 20MHz: R.3 TDD	-	5MHz: R.4 TDD 10MHz: R.0 TDD 20MHz: R.3 TDD	-
PDSCH alloc	cation	$n_{_{PRB}}$	5MHz: 7-17 10MHz: 13-36 20MHz: 38-61	5MHz: 7-17 10MHz: 13-36 20MHz: 38-61	-	5MHz: 7- 17 10MHz: 13-36 20MHz: 38-61	-
PDCCH/PCF Reference m channel defir			5MHz: R.11 FDD 10MHz: R.6 FDD 20MHz: R.10 FDD	5MHz: R.11 TDD 10MHz: R.6 TDD 20MHz: R.10 TDD	5MHz: R.11 TDD 10MHz: R.6 TDD 20MHz: R.10 TDD	5MHz: R.11 TDD 10MHz: R.6 TDD 20MHz: R.10 TDD	5MHz: R.11 TDD 10MHz: R.6 TDD 20MHz: R.10 TDD
OCNG Patte A.3.2.	rns defined in		5MHz: OP.15 FDD 10MHz: OP.1 FDD 20MHz: OP.11 FDD	5MHz: OP.9 TDD 10MHz: OP.1 TDD 20MHz: OP.7 TDD	5MHz: OP.10 TDD 10MHz: OP.2 TDD 20MHz: OP.8 TDD	5MHz: OP.7 TDD 10MHz: OP.1 TDD 20MHz: OP.7 TDD	5MHz: OP.10 TDD 10MHz: OP.2 TDD 20MHz: OP.8 TDD
PBCH_RA							
PBCH_RB							
PSS_RA							
SSS_RA							
PCFICH_RB							
PHICH_RA							
PHICH_RB		dB	0	0	0	0	0
PDCCH_RA							
PDCCH_RB							
PDSCH_RA							
PDSCH_RB	ste?						
OCNG_RANG							
OCNG_RB ^{No}	Bands TDD_A Bands TDD_C		-	(N_{oc} for Cha	nnel 1 +1dB)		Channel 1 dB)
	Bands TDD_E Bands FDD_A		-117			71	~ <i>D</i>)
	Bands FDD_B	dBm/15	-116.5]			
$N_{oc}^{ m Note3}$	Bands FDD_C	kHz	-116 115.5	-			
	Bands FDD_D Bands FDD_E, FDD_F Note 7		-115.5 -115	-			-
	Bands FDD_G Bands FDD_H		-114 -113.5	1			
\hat{E}_s/N_{oc}		dB	-4	3	-1	3	-1
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	-4	0.46	-5.76	0.46	-5.76
	Bands TDD_A		-	(RSRP for Cell	(RSRP for	(RSRP for	(RSRP for

	Bands TDD_C Bands TDD_E			1 +8dB)	Cell 1 +4dB)	Cell 1 +8dB)	Cell 1 +4dB)
	Bands FDD_E		-121			roub)	· 10D)
RSRP ^{Note4}	Bands FDD_B	dBm/15	-120.5				
1.5	Bands FDD_B	kHz	-120.5				
	Bands FDD_C						
			-119.5				
	Bands		440	-	_	-	-
	FDD_E, FDD_F Note 7		-119				
	Bands FDD_G		-118				
	Bands FDD_H		-117.5				
	Bands TDD_A			(Io for Channe	el 1 +5.33dB	(Io for Chani	nel 1 +5.33dB
	Bands TDD_C		-	· +10l	log	+10	Olog
	Bands TDD E			(N _{RB channel2} / I	N _{RB channel 1}))		/ N _{RB channel 1}))
	Bands FDD A	1	-87.76+10log(N _{RB.7} /50)	•	,,	,	,,
	Bands FDD B		-87.26+10log(N _{RB,o} /50)				
lo ^{Note4}	Bands FDD C	dBm/	-86.76+10log(N _{RB,} /50)				
10	Bands FDD D	BW _{channel}	-86.26+10log(N _{RB,} /50)				
	Bands	Gridinio		-			_
	FDD E.		-85.76 +10log(N _{RB.} /50)				
	FDD_F Note 7		(- IKB,0)				
	Bands FDD G		-84.76 +10log(N _{RB.} /50)				
	Bands FDD H		-84.26 +10log(N _{RB.} /50)				
Propagation		_	AWGN	AWGN	AWGN	AWGN	AWGN
Antenna Cor		_	1x2	1x2	1x2	1x2	1x2
Timing offse	t to cell 1	μs	-	0	3	0	3
Time alignm	ent error relative			< Τ ΛΓ		∠ Т ∧ ⊏	
to cell 1 Note 8			-	≤TAE	-	≤ TAE	-
Time alignm	ent error relative					≤TAE	
to cell 2 ^{Note 8}			-	-	-	≥ IAE	-
		ne and uplink-o	downlink configurations see	Tables 4.2-1 and 4	4.2-2 in TS 36.2°	11.	
Note 2:	OCNG shall be use	ed such that all	cells are fully allocated and	a constant total tr	ansmitted power	spectral dens	ity is
	achieved for all OF	DM symbols.	-				
Note 3:	nterference from o	ther cells and	noise sources not specified i	n the test is assur	ned to be consta	int over subca	rriers and
	بمرا المحام لمسم مست		ICNL of annuanciate navious fo	M h £1£:11	1		

- time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
- Note 4: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 5: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
- Note 6: The selection of the bands for testing depends on the configuration of the carrier aggregation supported by the UEs.
- For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within Note 7: 865-894 MHz.
- Note 8: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.
- Note 9: E-UTRA operating band groups are as defined in Section 3.5.

A.9.1.37.3 **Test Requirements**

In the test, the performance of RSRP measurements is verified from the following 7 perspectives:

- The absolute accuracy of intra-frequency RSRP measurements for Cell 1 on the primary component carrier shall fulfil the requirements defined in clause 9.1.11.1.
- The absolute accuracy of intra-frequency RSRP measurements for Cell 2 on SCC1 shall fulfil the requirements defined in clause 9.1.11.2.
- The absolute accuracy of intra-frequency RSRP measurements for Cell 4 on SCC2 shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of intra-frequency RSRP measurements for Cell 3 relative to Cell 2 on SCC1 shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of intra-frequency RSRP measurements for Cell 5 relative to Cell 4 on SCC2 shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of inter-frequency RSRP measurements between SCC1 and the primary component carriers for Cell 2 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.11.3.
- The relative accuracy of inter-frequency RSRP measurements between SCC2 and the primary component carriers for Cell 4 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.11.3.

A.9.1.38 3 DL PCell in TDD RSRP for E-UTRAN in Carrier Aggregation

A.9.1.38.1 Test Purpose and Environment

The purpose of this test is to verify that the TDD-FDD RSRP absolute and relative accuracy requirements in carrier aggregation with PCell in TDD are within the specified limits. This test will verify the absolute RSRP accuracy requirements of the primary component carrier defined in clause 9.1.11.1, the absolute RSRP accuracy requirements of the secondary component carriers defined in clause 9.1.11.2, and the relative RSRP accuracy requirements of the secondary component carriers defined in clause 9.1.11.2. The test will also verify the primary and secondary component carriers' relative RSRP accuracy requirement defined in Clause 9.1.11.3.

A.9.1.38.2 Test parameters

In this set of cases cell 1 is PCell on the primary component carrier, and cell 2 and cell 4 are activated SCells on secondary component carriers SCC1 and SCC2 respectively. Cell 3 and cell 5 are neighbouring cells on secondary component carriers SCC1 and SCC2 respectively. The test parameters are given in Table A.9.1.38.2-1.

Table A.9.1.38.2-1: 3 Downlink PCell in TDD RSRP carrier aggregation test parameters

Parameter	Unit	Cell 1	Cell 2	Cell 3	Cell 4	Cell 5
E-UTRA RF Channel Number		1	:	2		3
BW _{channel}	MHz	$5MHz: \\ N_{RB,c} = 25 \\ 10MHz: \\ N_{RB,c} = 50 \\ 20MHz: \\ N_{RB,c} = 100$	10MHz: I	$I_{RB,c} = 25$ $N_{RB,c} = 50$ $I_{RB,c} = 100$	10MHz	N _{RB,c} = 25 : N _{RB,c} = 50 N _{RB,c} = 100
Special subframe configuration Note1		6	-			-
Uplink/downlink configuration ^{Note1}		1		-		-
Measurement bandwidth	n_{PRB}	5MHz: 10-15 10MHz: 22-27 20MHz: 47-52	10MHz 20MHz	: 10-15 :: 22-27 :: 47-52	10MF 20MF	z: 10-15 lz: 22-27 lz: 47-52
PDSCH Reference measurement channel defined in A.3.1.1.		5MHz: R.4 TDD 10MHz: R.0 TDD 20MHz: R.3 TDD	5MHz: R.5 FDD 10MHz: R.0 FDD 20MHz: R.4 FDD	-	5MHz: R.5 FDD 10MHz: R.0 FDD 20MHz: R.4 FDD	-
PDSCH allocation	$n_{{\it PRB}}$	5MHz: 7-17 10MHz: 13-36 20MHz: 38-61	5MHz: 7-17 10MHz: 13-36 20MHz: 38-61	-	5MHz: 7- 17 10MHz: 13-36 20MHz: 38-61	-
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.		5MHz: R.11 TDD 10MHz: R.6 TDD 20MHz: R.10 TDD	5MHz: R.11 FDD 10MHz: R.6 FDD 20MHz: R.10 FDD	5MHz: R.11 FDD 10MHz: R.6 FDD 20MHz: R.10 FDD	5MHz: R.11 FDD 10MHz: R.6 FDD 20MHz: R.10 FDD	5MHz: R.11 FDD 10MHz: R.6 FDD 20MHz: R.10 FDD
OCNG Patterns defined in A.3.2.		5MHz: OP.9 TDD 10MHz: OP.1 TDD 20MHz: OP.7 TDD	5MHz: OP.15 FDD 10MHz: OP.1 FDD 20MHz: OP.11 FDD	5MHz: OP.16 FDD 10MHz: OP.2 FDD 20MHz: OP.12 FDD	5MHz: OP.15 FDD 10MHz: OP.1 FDD 20MHz: OP.11 FDD	5MHz: OP.16 FDD 10MHz: OP.2 FDD 20MHz: OP.12 FDD
PBCH_RA						
PBCH_RB						
PSS_RA						
SSS_RA						
PCFICH_RB						
PHICH_RA						
PHICH_RB	dB	0	0	0	0	0
PDCCH_RA						
PDCCH_RB						
PDSCH_RA						
PDSCH_RB						
OCNG_RA ^{Note1}						
OCNG_RB ^{Note1}						
Bands FDD_A Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 7 Bands FDD_G Bands FDD_G Bands FDD_H	dBm/15 kHz	-	(N_{oc} for Ch	annel 1 +1dB)	(N_{oc} for C	hannel 1 +1dB)
Bands TDD_A		-117				
Bands TDD_C Bands TDD_E		-116 -115		_		-
\hat{E}_s/N_{oc}	dB	-4	3	-1	3	-1

\hat{E}_{s}/I_{ot}		dB	-4	0.46	-5.76	0.46	-5.76
RSRP ^{Note4}	Bands FDD_A Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 7 Bands FDD_G Bands FDD_G Bands FDD_G Bands FDD_H	dBm/15 kHz	-	(RSRP for Cell 1 +8dB)	(RSRP for Cell 1 +4dB)	(RSRP for Cell 1 +8dB)	(RSRP for Cell 1 +4dB)
	Bands TDD_A		-121				
	Bands TDD_C		-120	=	-	-	=
	Bands TDD_E		-119				
Io ^{Note4}	Bands FDD_A Bands FDD_B Bands FDD_D Bands FDD_E, FDD_F Note 7 Bands FDD_G Bands FDD_H Bands TDD_A Bands TDD_C Bands TDD_C Bands TDD_C Bands TDD_C Bands TDD_C	dBm/ BW _{channel}	-87.76+10log(N _{RB.0} /50) -86.76+10log(N _{RB.0} /50) -85.76+10log(N _{RB.0} /50)	(lo for Channel 1 +5.33dB +10log (N _{RB channel2} / N _{RB channel 1}))		` + <i>′</i>	nnel 1 +5.33dB 10log / N _{RB channel 1}))
Propagation		-	AWGN	AWGN	AWGN	AWGN	AWGN
Antenna Con		-	1x2	1x2	1x2	1x2	1x2
Timing offset		μs	-	0	3	0	3
Time alignme to cell 1 Note 8	ent error relative		-	≤TAE	-	≤TAE	-
	ent error relative		-	-	-	≤TAE	-
Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211. Note 2: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and							

time and shall be modelled as AWGN of appropriate power for $\,N_{oc}\,$ to be fulfilled.

Note 4: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port. Note 5:

The selection of the bands for testing depends on the configuration of the carrier aggregation supported by the UEs. Note 6:

Note 7: For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.

Note 8: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier

E-UTRA operating band groups are as defined in Section 3.5. Note 9:

A.9.1.38.3 Test Requirements

In the test, the performance of RSRP measurements is verified from the following 7 perspectives:

- The absolute accuracy of intra-frequency RSRP measurements for Cell 1 on the primary component carrier shall fulfil the requirements defined in clause 9.1.11.1.
- The absolute accuracy of intra-frequency RSRP measurements for Cell 2 on SCC1 shall fulfil the requirements defined in clause 9.1.11.2.
- The absolute accuracy of intra-frequency RSRP measurements for Cell 4 on SCC2 shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of intra-frequency RSRP measurements for Cell 3 relative to Cell 2 on SCC1 shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of intra-frequency RSRP measurements for Cell 5 relative to Cell 4 on SCC2 shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of inter-frequency RSRP measurements between SCC1 and the primary component carriers for Cell 2 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.11.3. The relative accuracy

of inter-frequency RSRP measurements between SCC2 and the primary component carriers for Cell 4 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.11.3.

A.9.1.39 3 DL FDD RSRP for E-UTRAN in Carrier Aggregation

A.9.1.39.1 Test Purpose and Environment

The purpose of this test is to verify that the FDD RSRP absolute and relative accuracy requirements in carrier aggregation are within the specified limits. This test will verify the absolute RSRP accuracy requirements of the primary component carrier defined in clause 9.1.11.1, the absolute RSRP accuracy requirements of the secondary component carriers defined in clause 9.1.11.2, and the relative RSRP accuracy requirements of the secondary component carriers defined in clause 9.1.11.2. The test will also verify the primary and secondary component carriers' relative RSRP accuracy requirement defined in Clause 9.1.11.3.

A.9.1.39.2 Test parameters

In this set of test cases there are five cells on three carrier frequencies. Cell 1 is PCell on channel 1, and cell 2 and cell 4 are activated SCells on secondary component carriers SCC1 and SCC2 respectively. Cell 3 and cell 5 are neighbouring cells on secondary component carriers SCC1 and SCC2 respectively. The parameters for the test are listed in Table A.9.1.39.2-1.

Table A.9.1.39.2-1: 3 DL FDD RSRP test parameters for E-UTRAN Carrier aggregation (cell #1, cell #2 and cell #3)

Pa	rameter	Unit	Cell 1	Cell 2	Cell 3
E-UTRA RF			1	2	
Number			-		
DIA			5MHz: $N_{RB,c} = 25$		$I_{RB,c} = 25$
BW _{channel}		MHz	$10MHz: N_{RB,c} = 50$		$N_{RB,c} = 50$
			20MHz: $N_{RB,c} = 100$ 5MHz: 10-15		I _{RB,c} = 100
Measureme	ent bandwidth	n_{PRB}	10MHz: 22-27		:: 22 - 27
Modedionic	and Width	PRB	20MHz: 47-52		:: 47-52
PDSCH Re	ference		5MHz: R.5 FDD	5MHz: R.5 FDD	
measureme	ent channel		10MHz: R.0 FDD	10MHz: R.0 FDD	-
defined in A.3.1.1.1			20MHz: R.4 FDD	20MHz: R.4 FDD	
			5MHz: 7-17	5MHz: 7-17	
PDSCH allocation		n_{PRB}	10MHz: 13-36 20MHz: 38-61	10MHz: 13-36 20MHz: 38-61	-
PDCCH/PC	FICH/PHICH		5MHz: R.11 FDD	5MHz: R.11 FDD	5MHz: R.11 FDD
Reference measurement			10MHz: R.6 FDD	10MHz: R.6 FDD	10MHz: R.6 FDD
channel defined in A.3.1.2.1			20MHz: R.10 FDD	20MHz: R.10 FDD	20MHz: R.10 FDD
			5MHz: OP.15 FDD	5MHz: OP.15 FDD	5MHz: OP.16 FDD
	erns defined in		10MHz: OP.15 FDD	10MHz: OP.1 FDD	10MHz: OP.2 FDD
A.3.2.1			20MHz: OP.11 FDD	20MHz: OP.11	20MHz: OP.12
PBCH_RA				FDD	FDD
PBCH_RA		-			
PSS_RA		1			
SSS_RA					
PCFICH_RB		1			
PHICH_RA		1		0	0
PHICH_RB		dB	0		
PDCCH_RA					
	PDCCH_RB				
	PDSCH_RA				
PDSCH_RE	3 Note1	1			
OCNG_RA	Note1	1			
OCNG_RB	Bands FDD_A		-117		
	Bands FDD_A	1	-116.5		
	Bands FDD_C	•	-116		
λ/ Note2	Bands FDD_D	dBm/	-115.5	(N) for Oh	
$N_{oc}^{ m Note2}$	Bands FDD F	15kHz	115	(IV _{oc} for Cha	annel 1 +1dB)
	FDD_F Note 6		-115		
	Bands FDD_G		-114		
	Bands FDD_H		-113.5		
\hat{E}_s/N_{oc}		dB	-4	3	-1
\hat{E}_{s}/I_{ot}		dB	-4	0.46	-5.76
	Bands FDD_A		-121		
	Bands FDD_B	1	-120.5		
	Bands FDD_C]	-120		
RSRP ^{Note3}	Bands FDD_D	dBm/	-119.5	(RSRP for Cell 1	(RSRP for Cell 1
	Bands FDD_E, FDD_F Note 6	15kHz	-119	+8dB)	+4dB)
	Bands FDD_G Bands FDD_H		-118 -117.5		
			-87.76		<u> </u>
	Bands FDD_A		+10log(N _{RB,c} /50)		
	Banda EDD B	1	-87.26		
No. 1-0	Bands FDD_B	dBm/	+10log(N _{RB,c} /50)	(In for Channel 1	+5.33dB +10log
Io ^{Note3}	Bands FDD_C	BW _{channel}	-86.76	`	N _{RB channel 1}))
		- · · channel	+10log(N _{RB,c} /50)	(TID CHANNELZ /	ND GIAIIIEI I//
	Bands FDD_D		-86.26 +10log(N _{RB,o} /50)		
	Bands FDD_E,		-85.76		
L		1		1	

FDD_F	Note 6		+10log(N _{RB,c} /50)		
Bands	FDD_G		-84.76 +10log(N _{RB,o} /50)		
Bands	FDD_H		-84.26 +10log(N _{RB,c} /50)		
Propagation Conditi	on		AWGN	AWGN	AWGN
Antenna Configurati	ion		1x2	1x2	1x2
Timing offset to Cell	1	μs	-	0	3
Time alignment erro	r relative		-	≤ TAE	
N 4 4 00NO 1		1 41 41	4 11 (11 11		1.4 144 1

- Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
- Note 3: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 4: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
- Note 5: The selection of the bands for testing depends on the configuration of the carrier aggregation supported by the UEs.
- Note 6: For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.
- Note 7: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.
- Note 8: E-UTRA operating band groups are as defined in Section 3.5.

Table A.9.1.39.2-2: 3 DL FDD RSRP test parameters for E-UTRAN Carrier aggregation (cell #4 and cell #5)

Pa	rameter	Unit	Cell 4	Cell 5		
E-UTRA RF		•				
Number			3	3		
				RB,c = 25		
BW _{channel}		MHz		$N_{RB,c} = 50$		
			20MHz: N _{RB,c} = 100			
Magaurama	nt handwidth	14		10-15		
ivieasureme	ent bandwidth	$n_{{\it PRB}}$:: 22-27 :: 47-52		
PDSCH Re	ference		5MHz: R.5 FDD	47-52		
measureme			10MHz: R.0 FDD	-		
defined in A			20MHz: R.4 FDD			
			5MHz: 7-17			
PDSCH allo	ocation	n_{PRB}	10MHz: 13-36	-		
			20MHz: 38-61			
	FICH/PHICH		5MHz: R.11 FDD	5MHz: R.11 FDD		
	Reference measurement		10MHz: R.6 FDD	10MHz: R.6 FDD		
channel defined in A.3.1.2.1			20MHz: R.10 FDD 5MHz: OP.15 FDD	20MHz: R.10 FDD 5MHz: OP.16 FDD		
OCNG Patt	erns defined in		10MHz: OP.15 FDD	10MHz: OP.16 FDD		
A.3.2.1	erris defined in		20MHz: OP.11	20MHz: OP.12		
71.0.2.1			FDD	FDD		
PBCH_RA						
PBCH_RB						
PSS_RA						
SSS_RA	SSS_RA					
	PCFICH_RB					
PHICH_RA	PHICH_RA					
PHICH_RB	_		0	0		
	PDCCH_RA					
	PDCCH_RB					
PDSCH_RA						
PDSCH_RE OCNG_RA	Note1					
OCNG_RB	Note1					
OCNG_KB	Bands FDD_A					
	Bands FDD_A					
	Bands FDD_C					
λ/ Note2	Bands FDD_D	dBm/	. 3.7			
$N_{oc}^{ m Note2}$	Bands FDD_E,	15kHz	(N_{oc} for Channel 1 +1dB)			
	FDD_F Note 6					
	Bands FDD_G					
	Bands FDD_H					
\hat{E}_s/N_{oc}		dB	3	-1		
\hat{E}_s/I_{ot}		dB	0.46	-5.76		
s / OI	Bands FDD_A					
	Bands FDD_A					
	Bands FDD_B Bands FDD_C					
Noto?	Bands FDD_C	dBm/	(RSRP for Cell 1	(RSRP for Cell 1		
RSRP ^{Note3}		15kHz	+8dB)	+4dB)		
	Bands FDD_E, FDD_F Note 6					
	Bands FDD_G					
	Bands FDD_H					
	Bands FDD_A					
	Bands FDD_B					
	Bands FDD_C					
Io ^{Note3}	Bands FDD_D	dBm/		+5.33dB +10log		
	Bands FDD_E,	BW _{channel}	(N _{RB channel3} /	N _{RB channel 1}))		
	FDD_F Note 6					
	Bands FDD_G					
	Bands FDD_H					

Propagati	on Condition		AWGN	AWGN
Antenna (Configuration		1x2	1x2
Timing off	fset to Cell 1	μs	0	3
Time aligito cell 1 No	Time alignment error relative to cell 1 Note 7		≤TAE	-
Time aligito cell 2 ^{No}	Time alignment error relative to cell 2 ^{Note 7}		≤TAE	-
Note 1:	OCNG shall be use		both cells are fully alloc	
Note 2:	Interference from of	her cells an	density is achieved for d noise sources not speak abcarriers and time and	ecified in the test is
	as AWGN of approp	oriate power	for N_{oc} to be fulfilled.	
Note 3:			derived from other para not settable parameter	
Note 4:			re specified assuming receiver antenna port.	independent
Note 5:		bands for te	esting depends on the	configuration of the
Note 6:	For Band 26, the te	sts shall be p	performed with the card dwidth within 865-894 N	
Note 7:	Time alignment erro	or (TAE) as s	specified in TS 36.104 he type of carrier aggre	[30] clause 6.5.3.1.
Note 8:			are as defined in Sect	

A.9.1.39.3 Test Requirements

In the test, the performance of RSRP measurements is verified form following four perspectives:

- The absolute accuracy of intra-frequency RSRP measurements for Cell 1 on the primary component carrier shall fulfil the requirements defined in clause 9.1.11.1.
- The absolute accuracy of intra-frequency RSRP measurements for Cell 2 on SCC1 shall fulfil the requirements defined in clause 9.1.11.2.
- The absolute accuracy of intra-frequency RSRP measurements for Cell 4 on SCC2 shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of intra-frequency RSRP measurements for Cell 3 relative to Cell 2 on SCC1 shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of intra-frequency RSRP measurements for Cell 5 relative to Cell 4 on SCC2 shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of inter-frequency RSRP measurements between SCC1 and the primary component carriers for Cell 2 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.11.3.
- The relative accuracy of inter-frequency RSRP measurements between SCC2 and the primary component carriers for Cell 4 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.11.3.

A.9.1.40 3 DL TDD RSRP for E-UTRAN in Carrier Aggregation

A.9.1.40.1 Test Purpose and Environment

The purpose of this test is to verify that the FDD RSRP absolute and relative accuracy requirements in carrier aggregation are within the specified limits. This test will verify the absolute RSRP accuracy requirements of the primary component carrier defined in clause 9.1.11.1, the absolute RSRP accuracy requirements of the secondary component carriers defined in clause 9.1.11.2, and the relative RSRP accuracy requirements of the secondary component carriers defined in clause 9.1.11.2. The test will also verify the primary and secondary component carriers' relative RSRP accuracy requirement defined in Clause 9.1.11.3.

A.9.1.40.2 Test parameters

In this set of test cases there are five cells on three carrier frequencies. Cell 1 is PCell on channel 1, and cell 2 and cell 4 are activated SCells on secondary component carriers SCC1 and SCC2 respectively. Cell 3 and cell 5 are neighbouring cells on secondary component carriers SCC1 and SCC2 respectively. The parameters for the test are listed in Table A.9.1.40.2-1.

Table A.9.1.40.2-1: 3 DL TDD RSRP test parameters for E-UTRAN Carrier aggregation (cell #1, cell #2 and cell #3)

Pa	rameter	Unit	Cell 1	Cell 2	Cell 3	
E-UTRA RI	- Channel		1	,	2	
Number						
			5MHz: $N_{RB,c} = 25$		$I_{RB,c} = 25$	
BW _{channel}			$10MHz: N_{RB,c} = 50$		$N_{RB,c} = 50$	
			$20MHz: N_{RB,c} = 100$	20MHz: N	I _{RB,c} = 100	
Special sub	oframe			6		
configuration	on "					
Uplink/dow configuration	niink on ^{Note1}			1		
oormgaratic	711		5MHz: 10-15	5MHz	10-15	
Measureme	ent bandwidth	n_{PRB}	10MHz: 22-27		: 22-27	
Mododiom	one banaman	PRB	20MHz: 47-52		: 47-52	
PDSCH Re	ference		5MHz: R.4 TDD	5MHz: R.4 TDD	02	
measureme			10MHz: R.0 TDD	10MHz: R.0 TDD	_	
defined in A			20MHz: R.3 TDD	20MHz: R.3 TDD	_	
defined in F	1.0.1.1.2		5MHz: 7-17	5MHz: 7-17		
PDSCH allocation		n	10MHz: 13-36	10MHz: 13-36		
I DOCH all	Joanon	n_{PRB}			_	
PDCCH/PCFICH/PHICH			20MHz: 38-61	20MHz: 38-61 5MHz: R.11 TDD	5MU D 11 TDD	
			5MHz: R.11 TDD	_	5MHz: R.11 TDD	
	measurement fined in A.3.1.2.2		10MHz: R.6 TDD	10MHz: R.6 TDD	10MHz: R.6 TDD	
channel de	iiiieu iii A.3.1.2.2		20MHz: R.10 TDD	20MHz: R.10 TDD	20MHz: R.10 TDD	
OCNG Patt	terns defined in		5MHz: OP.9 TDD	5MHz: OP.9 TDD	5MHz: OP.10 TDD	
A.3.2.2			10MHz: OP.1 TDD	10MHz: OP.1 TDD	10MHz: OP.2 TDD	
			20MHz: OP.7 TDD	20MHz: OP.7 TDD	20MHz: OP.8 TDD	
PBCH_RA						
PBCH_RB						
PSS_RA						
SSS_RA						
PCFICH_R	В					
PHICH_RA	1					
PHICH_RB		dB	0	0	0	
	PDCCH_RA		-		-	
	PDCCH_RB					
	PDSCH_RA					
	PDSCH_RB					
OCNG_RA	Note2					
OCNG_RB	Note2					
	Bands TDD_A		-117			
$N_{oc}^{ m \ Note3}$	Bands TDD_A Bands TDD_C	dBm/	-116	(N) for Ch	annal 1 + 1 dD\	
IV oc		15kHz		(1V _{oc} for Ch	annel 1 +1dB)	
^ /	Bands TDD_E		-115			
\hat{E}_s/N_{oc}		dB	-4	3	-1	
$\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$		dB	-4	0.46	-5.76	
	Bands TDD_A		-121			
RSRP ^{Note4}	Bands TDD_C	dBm/	-120	(RSRP for Cell 1	(RSRP for Cell 1	
	Bands TDD_E	15kHz	-119	+8dB)	+4dB)	
	_		-87.76 +		<u> </u>	
	Bands TDD_A		10log(N _{RB,c} /50)			
Note 4		dBm/	-86.76 +	(In for Channel 1	+5.33dB +10log	
Io ^{Note4}	Bands TDD_C	BW _{channel}	10log(N _{RB,c} /50)			
		_ Dvv channel	-85.76 +	(N _{RB channel2} / N _{RB channel 1}))		
	Bands TDD_E					
Dropogatic	n Condition		10log(N _{RB,c} /50)	AWGN	ANA/CNI	
Propagation			AWGN		AWGN	
	onfiguration		1x2	1x2	1x2	
Timing offse		μs	-	0	3	
Time alignn	nent error		_	≤TAE	_	
relative to c	cell 1 Note /		=		_	
Noto 1:	For appoint aubfror	مناميا لممام	k downlink configuratio	ns see Tables 4 2-1 an	d 4 2 2 in TC 26 244	

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant

	over subcarriers and time and shall be modelled as AWGN of appropriate power for $^{N_{oc}}$ to be fulfilled.
Note 4:	RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
Note 5:	RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
Note 6:	The selection of the bands for testing depends on the configuration of the carrier aggregation supported by the UEs.
Note 7:	Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.
Note 8:	E-UTRA operating band groups are as defined in Section 3.5.

Table A.9.1.40.2-2: 3 DL TDD RSRP test parameters for E-UTRAN Carrier aggregation (cell #4 and cell #5)

Pa	rameter	Unit	Cell 4	Cell 5
E-UTRA RF Channel		- Cint		•
Number			•	3
				I _{RB,c} = 25
BW _{channel}		MHz		$N_{RB,c} = 50$
0	,		20MHz: N	I _{RB,c} = 100
Special sub configuration	frame _Note1		(3
Uplink/dowr	llink			
configuratio	n ^{Note1}		•	1
coringulatio	11		5MHz:	10-15
Measurement bandwidth		n_{PRB}		:: 22-27
		PKB	20MHz	:: 47-52
PDSCH Re	ference		5MHz: R.4 TDD	
measureme			10MHz: R.0 TDD	N/A
defined in A.3.1.1.2			20MHz: R.3 TDD	
DDCCH -III			5MHz: 7-17	N1/A
PDSCH allo	ocation	n_{PRB}	10MHz: 13-36	N/A
PDCCH/PCFICH/PHICH			20MHz: 38-61 5MHz: R.11 TDD	5MHz: R.11 TDD
	measurement		10MHz: R.6 TDD	10MHz: R.6 TDD
	ined in A.3.1.2.2		20MHz: R.10 TDD	20MHz: R.10 TDD
			5MHz: OP.9 TDD	5MHz: OP.10 TDD
	erns defined in		10MHz: OP.1 TDD	10MHz: OP.2 TDD
A.3.2.2			20MHz: OP.7 TDD	20MHz: OP.8 TDD
PBCH_RA				
PBCH_RB				
PSS_RA				
SSS_RA				
PCFICH_R				
PHICH_RA				
PHICH_RB		dB	0	0
PDCCH_R/				
PDCCH_RE				
PDSCH_RA				
PDSCH_RE OCNG_RA		-		
OCNG_RB				
OCNG_RB	Bands TDD A			
$N_{oc}^{ m Note3}$	Bands TDD_A Bands TDD_C	dBm/	$(N_{ac}$ for Channel 1 +1dB)	
1 voc	Bands TDD_6	15kHz	(11000)	anner i riab)
\hat{E}_s/N_{oc}	,	dB	3	-1
∠ _s / 1 v oc				
\hat{E}_s/I_{ot}		dB	0.46	-5.76
	Bands TDD_A	dDr. /	(DODD (C - !! 1	(DODD (-: 0 # 1
RSRP ^{Note4}	Bands TDD_C	dBm/	(RSRP for Cell 1 +8dB)	(RSRP for Cell 1 +4dB)
-	Bands TDD_E	15kHz	+oub)	T4uD)
<u> </u>	Bands TDD A			+5 33dB +10log
	Bands TDD_A	dBm/	(lo for Channel 1 +5.33dB +10log	
Io ^{Note4}	Bands TDD_C	dBm/		
Io ^{Note4}	Bands TDD_C Bands TDD_E	dBm/ BW _{channel}	(N _{RB channel3} /	N _{RB channel 1}))
Io ^{Note4}	Bands TDD_C Bands TDD_E Condition		(N _{RB channel3} /	N _{RB channel 1})) AWGN
Io ^{Note4} Propagation Antenna Co	Bands TDD_C Bands TDD_E Condition onfiguration		(N _{RB channel3} / AWGN 1x2	N _{RB channel 1})) AWGN 1x2
Io ^{Note4} Propagation Antenna Co Timing offse	Bands TDD_C Bands TDD_E Condition onfiguration et to Cell 1		(N _{RB channel3} /	N _{RB channel 1})) AWGN
Io ^{Note4} Propagation Antenna Co Timing offse Time alignm	Bands TDD_C Bands TDD_E Condition Onfiguration et to Cell 1	BW _{channel}	(N _{RB channel3} / AWGN 1x2 0	N _{RB channel 1})) AWGN 1x2
Propagation Antenna Co Timing offse Time alignm relative to c	Bands TDD_C Bands TDD_E Condition Infiguration Et to Cell 1 Inent error Inell 1 Note 7	BW _{channel}	(N _{RB channel3} / AWGN 1x2	N _{RB channel 1})) AWGN 1x2
Io ^{Note4} Propagation Antenna Co Timing offse Time alignm	Bands TDD_C Bands TDD_E Condition Infiguration Et to Cell 1 Inent error Inent error Inent error Inent error	BW _{channel}	(N _{RB channel3} / AWGN 1x2 0	N _{RB channel 1})) AWGN 1x2

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Interference from other cells and noise sources not specified in the test is Note 3: assumed to be constant over subcarriers and time and shall be modelled

	as AWGN of appropriate power for N_{oc} to be fulfilled.
Note 4:	RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
Note 5:	RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
Note 6:	The selection of the bands for testing depends on the configuration of the carrier aggregation supported by the UEs.
Note 7:	Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.
Note 8:	E-UTRA operating band groups are as defined in Section 3.5.

A.9.1.40.3 Test Requirements

In the test, the performance of RSRP measurements is verified form following four perspectives:

- The absolute accuracy of intra-frequency RSRP measurements for Cell 1 on the primary component carrier shall fulfil the requirements defined in clause 9.1.11.1.
- The absolute accuracy of intra-frequency RSRP measurements for Cell 2 on SCC1 shall fulfil the requirements defined in clause 9.1.11.2.
- The absolute accuracy of intra-frequency RSRP measurements for Cell 4 on SCC2 shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of intra-frequency RSRP measurements for Cell 3 relative to Cell 2 on SCC1 shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of intra-frequency RSRP measurements for Cell 5 relative to Cell 4 on SCC2 shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of inter-frequency RSRP measurements between SCC1 and the primary component carriers for Cell 2 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.11.3.
- The relative accuracy of inter-frequency RSRP measurements between SCC2 and the primary component carriers for Cell 4 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.11.3.

A.9.1.41 FD-FDD RSRP Intra frequency case for UE category 0

A.9.1.41.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.13.1 and 9.1.13.2 for FD-FDD intra frequency RSRP measurements for UE category 0.

A.9.1.41.2 Test parameters

In this set of test cases all cells are on the same carrier frequency. Both absolute and relative accuracy of RSRP intra frequency measurements are tested by using the parameters in Table A.9.1.41.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell.

Table A.9.1.41.2-1: FD-FDD RSRP Intra frequency test parameters for UE category 0

Parameter		Unit	Test 1		Test 2		Test 3	
			Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
	hannel Number		1		1			
BW _{channel}		MHz	10		10		10	
Measurement bandwidth		$n_{{\scriptscriptstyle PRB}}$	22—27		22—27		22—27	
PDSCH Reference measurement			R.13		R.13		R.13	
	channel defined in A.3.1.1.3		FDD		FDD		FDD	
PDSCH alloca		$n_{\it PRB}$	13—36	-	13—36	-	13—36	-
	CH/PHICH Reference		D 0 EDD		R.6 FDD		R.6 FDD	
measurement channel defined in			R.6	FDD				
A.3.1.2.1			OP.1	OP.2	OP.1	OP.2	OP.1	OP.2
OCNG Pattern	s defined in A.3.2.1		FDD	FDD	FDD	FDD	FDD	FDD
PBCH_RA								
PBCH_RB								
PSS_RA								
SSS_RA PCFICH_RB								
PHICH_RA						0		0
PHICH_RB		dB	0	0	0		0	
PDCCH_RA								
PDCCH_RB								
	PDSCH_RA							
PDSCH_RB								
OCNG_RA ^{Note1} OCNG_RB ^{Note1}								
OONO_ND	Bands FDD_A						-116	
	Bands FDD_C		-106		-86		-115	
$N_{oc}^{ m Note2}$	Bands FDD_D						-114.5	
1 voc	Bands FDD_E, FDD_F Note 4	dBm/15 kHz					-114	
	Bands FDD_G Note 6						-113	
	Bands FDD_G Bands FDD_H						-112.5	
\hat{E}_s/N_{oc}	_	dB	6	1	6	1	3	-1
		4D	2.5		0.5		0.40	F 70
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	T	dB	2.5	-6	2.5	-6	0.46	-5.76
	Bands FDD_A Bands FDD_B						-113 -112.5	-117 -116.5
	Bands FDD_B						-112.5	-116.5
DODDNote3	Bands FDD_D	dBm/15 kHz	-100	405	-80	-85	-111.5	-115.5
RSRP ^{Note3}	Bands FDD_E,			-105			-111	-115
	FDD_F Note 4							
	Bands FDD_G Note 6						-110	-114
	Bands FDD_H						-109.5 -82	-113.5
	Bands FDD_A Bands FDD_B							. 43 .93
Io ^{Note3}	Bands FDD_C	- dBm/9 MHz	-70.27		-50.27			.43
	Bands FDD_D							.93
	Bands FDD_E,		-70	1.21	-50).27	-80	.43
	FDD_F Note 4 Bands FDD_G Note 6							
	Bands FDD_H						-79.43 -78.93	
Propagation condition		-	AWGN		AWGN		AWGN	
Correlation Matrix and Antenna			1x1		1x1		1x1	
Configuration	10 1 11							
Note 1: OCNG shall be used such t		hat both cells a	e fully allo	hated and	a constant	total trans	mitted now	ıer

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: Es/lot, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel

bandwidth within 865-894 MHz.

Note 5: E-UTRA operating band groups are as defined in Section 3.5.

Note 6: Except Band 29 and Band 32.

A.9.1.41.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in sections 9.1.13.1 and 9.1.13.2.

A.9.1.42 HD-FDD RSRP Intra frequency case for UE category 0

A.9.1.42.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.13.1 and 9.1.13.2 for HD-FDD intra frequency RSRP measurements for UE category 0.

A.9.1.42.2 Test parameters

In this set of test cases all cells are on the same carrier frequency. Both absolute and relative accuracy of RSRP intra frequency measurements are tested by using the parameters in Table A.9.1.42.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell.

Table A.9.1.42.2-1: HD-FDD RSRP Intra frequency test parameters for UE category 0

Parameter		Unit	Test 1		Test 2		Test 3	
			Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF Channel Number			1		1		1	
BW _{channel}		MHz	10		10		10	
Measurement bandwidth		n_{PRB}	22—27		22—27		22—27	
PDSCH Reference measurement channel defined in A.3.1.1.4		TKB	R.1 HD- FDD	-	R.1 HD- FDD	-	R.1 HD- FDD	-
PDSCH allocation		n_{PRB}	13—36	-	13—36	-	13—36	-
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.3			R.3 HD-FDD		R.3 HD-FDD		R.3 HD-FDD	
OCNG Patterns defined in A.3.2.1			OP.1 FDD	OP.2 FDD	OP.1 FDD	OP.2 FDD	OP.1 FDD	OP.2 FDD
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RA OCNG_RB	Bands DD_A	dB	0	0	0	0	0 -1	
N _{oc} Note2 Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 5 Bands FDD_G Note 7 Bands FDD_H		dBm/15 kHz	-106		-86		-115 -114.5 -114 -113 -112.5	
\hat{E}_s/N_{oc}		dB	6	1	6	1	3	-1
$\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$		dB	2.5	-6	2.5	-6	0.46	-5.76
RSRP ^{Note3}	Bands FDD_A Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 4 Bands FDD_G Note 6 Bands FDD_H	dBm/15 kHz	-100	-105	-80	-85	-113 -112.5 -112 -111.5 -111 -110 -109.5	-117 -116.5 -116 -115.5 -115 -114 -113.5
lo ^{Note3}	Bands FDD_A Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 4 Bands FDD_G Note 6 Bands FDD_H	dBm/9 MHz		.27		.27	-82.43 -81.93 -81.43 -80.93 -80.43 -79.43 -78.93	
Propagation condition		-	AWGN		AWGN		AWGN	
Correlation Matrix and Antenna			1)	κ1	1x1		1x1	
Configuration Note 1: OCNG shall be used such t		 						

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: Es/lot, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

	UTRA channel
bandwidth within 865-894 MHz.	

Note 5: E-UTRA operating band groups are as defined in Section 3.5.

Note 6: Except Band 29 and Band 32.

A.9.1.42.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in sections 9.1.13.1 and 9.1.13.2.

A.9.1.43 TDD RSRP Intra frequency case for UE category 0

A.9.1.43.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.13.1 and 9.1.13.2 for TDD intra frequency RSRP measurements for UE category 0.

A.9.1.43.2 Test parameters

In this set of test cases all cells are on the same carrier frequency. Both absolute and relative accuracy of RSRP intra frequency measurements are tested by using the parameters in Table A.9.1.43.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell.

Table A.9.1.43.2-1: TDD RSRP Intra frequency test parameters for UE category 0

Parameter		Unit	Test 1		Test 2		Test 3	
			Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
	E-UTRA RF Channel Number		1		1		1	
	BW _{channel}		10		1	0	10	
Special subframe configuration Note1			6		6		6	
Uplink/downlir	nk configuration Note1		1		1		1	
Measurement		n_{PRB}	22—27		22—27		22—27	
PDSCH Reference measurement channel defined in A.3.1.1.5			R.12 TDD	-	R.12 TDD	-	R.12 TDD	-
PDSCH alloca	ation	$n_{{\scriptscriptstyle PRB}}$	13—36	-	13—36	-	13—36	-
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.2			R.6 TDD		R.6 TDD		R.6 TDD	
A.3.2.2.1 (OP A.3.2.2.2 (OP	OCNG Patterns defined in A.3.2.2.1 (OP.1 TDD) and A.3.2.2.2 (OP.2 TDD)		OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RA POSCH_RB OCNG_RA ^{Note2} OCNG_RB		dB	0	0	0	0	0	0
$N_{oc}^{ m Note3}$	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/15 kHz	-1	06	3-	36	-1	15 14
\hat{E}_s/N_{oc}		dB	6	1	6	1	3	-1
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		2.5	-6	2.5	-6	0.5	-5.76
RSRP ^{Note4}	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/15 kHz	-100	-105	-80	-85	-113 -112 -111	-117 -116 -115
	Bands TDD_A		·				-82.43	
lo ^{Note4}	Bands TDD_C	dBm/9 MHz	-70	.27	-50.27		-81.43	
	Bands TDD_E						-80.43	
Propagation condition		-	AWGN		AWGN		AWGN	
Configuration	Correlation Matrix and Antenna		1)		1x1		1x1	
Note 1: For special subframe and		Lunlink-downlink	configuration	ne saa Ta	hlac / 2-1	and 12-2	in TS 36 2	11

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over

subcarriers and time and shall be modelled as AWGN of appropriate power for $^{N_{oc}}$ to be fulfilled.

Note 4: Es/lot, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: E-UTRA operating band groups are as defined in Section 3.5.

A.9.1.43.3 Test Requirements

The RSRP measurement accuracy shall fulfil the requirements in sections 9.1.13.1 and 9.1.13.2.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

A.9.2 RSRQ

A.9.2.1 FDD Intra frequency case

A.9.2.1.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Clause 9.1.5.1.

A.9.2.1.2 Test parameters

In this test case all cells are on the same carrier frequency. The absolute accuracy of RSRQ intra frequency measurement is tested by using the parameters in Table A.9.2.1.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell.

Table A.9.2.1.2-1: RSRQ FDD Intra frequency test parameters

_			Tes	st 1	Tes	st 2	Tes	st 3
Ра	rameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF C	hannel Number			1		1	1	
BW _{channel}		MHz	1	0	1	0	1	0
Measurement I	bandwidth	$n_{{\scriptscriptstyle PRB}}$	22-	–27	22-	-27	22-	–27
PDSCH Refere channel define	ence measurement d in A.3.1.1.1		R.0 FDD	-	R.0 FDD	-	R.0 FDD	-
PDSCH allocat	tion	$n_{\it PRB}$	13—36	-	13—36	-	13—36	-
PDCCH/PCFIC	CH/PHICH asurement channel		R 6	FDD	R 6	FDD	R 6	FDD
defined in A.3.			11.0	100	11.0	100	14.0	100
OCNG Pattern			OP.1	00.0	OD 4	00.0	OP.1	00.0
A.3.2.1.1 (OP.			FDD	OP.2 FDD	OP.1 FDD	OP.2 FDD	FDD	OP.2 FDD
A.3.2.1.2 (OP.2	2 FDD)							
PBCH_RA PBCH_RB								
PSS_RA								
SSS_RA								
PCFICH_RB								
PHICH_RA								
PHICH_RB		dB	0	0	0	0	0	0
PDCCH_RA								
PDCCH_RB								
PDSCH_RA								
PDSCH_RB	1							
OCNG_RA ^{Note1}								
OCNG_RBNote	OCNG_RB ^{Note1}							
	Bands FDD_A							16
	Bands FDD_B				-103.85			5.5
	Bands FDD_C							15
$N_{oc}^{ m Note2}$	Bands FDD_D	ID /45111	0.4.70	04.70		-103.85	-11	4.5
oc .	Bands FDD_E, FDD_F Note 5	dBm/15 kHz	-84.76	-84.76			-114	
	Bands FDD G						-113	
	Note 7 Bands FDD_H						-112.5	
Ê/I	Dalius FDD_H	-10	4.70	4.70	4.7	4.7		
\hat{E}_{s}/I_{ot}	T	dB	-1.76	-1.76	-4.7	-4.7	-5.46	-5.46
	Bands FDD_A						-120	-120
	Bands FDD_B						-119.5	-119.5
	Bands FDD_C						-119	-119
RSRP ^{Note3}	Bands FDD_D	dBm/15 kHz	-81.76	-81.76	-106.75	-106.75	-118.5	-118.5
KOKP	Bands FDD_E, FDD_F Note 5	UDIII/13 KI IZ	-81.76	-01.70	-100.73	-100.73	-118	-118
	Bands FDD_G Note 7						-117	-117
	Bands FDD_H					<u> </u>	-116.5	-116.5
	Bands FDD_A							
	Bands FDD_B							
	Bands FDD_C							
Notes	Bands FDD_D							
RSRQ ^{Note3}	Bands FDD_E,	dB	-14.77	-14.77	-16.76	-16.76	-17.34	-17.34
	FDD_F Note 5							
	Bands FDD_G Note 7							
	Bands FDD_H							
	Bands FDD_A						-85	5.67
	Bands FDD_B						-85	5.17
Io ^{Note3}	Bands FDD_C	dBm/9 MHz	-50	-50	-73	-73	-84	.67
10	Bands FDD_D	אוווסו אוויסוא פיוויסט	-50	-50	-73	-13	-84	.17
	Bands FDD_E, FDD_F Note 5						-83	3.67
L	ι υυ_Γ		1		1			

	Bands FDD_G Note 7						-82	2.67	
	Bands FDD_H					•	-82	2.17	
\hat{E}_s/N_{oc}		dB	3	3	-2.9	-2.9	-4	-4	
Propagati	ion condition	-	AW	'GN	AW	GN	N AWGN		
Note 1: Note 2:	spectral density is achieved for all OFDM symbols. Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over							ant over	
subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. Note 3: RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Note 4: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at									
Note 5:	each receiver antenna port.								

bandwidth within 865-894 MHz. Note 6: E-UTRA operating band groups are as defined in Section 3.5.

Except Band 29 and Band 32. Note 7:

A.9.2.1.3 **Test Requirements**

The RSRQ measurement accuracy shall fulfil the requirements in Clause 9.1.5.1.

A.9.2.2 TDD Intra frequency case

A.9.2.2.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Clause 9.1.5.1.

A.9.2.2.2 Test parameters

In this test case all cells are on the same carrier frequency. The absolute accuracy of RSRQ intra frequency measurement is tested by using the parameters in Table A.9.2.2.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell.

Table A.9.2.2.2-1: RSRQ TDD Intra frequency test parameters

Par	rameter	Unit	Tes			st 2		st 3
		Offic	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
	Channel Number			1		1		1
B\	N _{channel} Note1	MHz		0		0	10 6	
Special subfran	ne configuration ^{Note1} Nk configuration ^{Note1}			<u>3</u> 1		<u>6</u> 1		
				-			1	
	nent bandwidth	$n_{\it PRB}$	22—27		22—27			–27
	ence measurement ined in A.3.1.1.2		R.0 TDD	-	R.0 TDD	-	R.0 TDD	-
PDSCI	-l allocation	$n_{\it PRB}$	13—36	-	13—36	-	13—36	-
measurement A.:	H/PHICH Reference channel defined in 3.1.2.2			TDD		TDD		TDD
	defined in A.3.2.2.1 A.3.2.2.2 (OP.2 TDD)		OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD
	CH_RA		100	100	100	100	100	100
	CH_RB							
	SS_RA							
	SS_RA				0	0		0
	FICH_RB ICH_RA							
	ICH_RB	dB	0	0			0	
	CCH_RA	uБ	0	0			0	
PDC	CCH_RB							
	SCH_RA							
PDS	SCH_RB							
OCN	G_RA ^{Note2}							
OCN	G_RB ^{Note2}							
$N_{oc}^{ m Note3}$	Bands TDD_A		-84.76	-84.76 -103.85		5 -103.85		16
oc oc	Bands TDD_C	dBm/15 kHz			76 -103.85		-115	
	Bands TDD_E						-1	14
Ê	$\Sigma_{\rm s}/{ m I}_{ m ot}$	dB	-1.76	-1.76	-4.7	-4.7	-5.46	-5.46
	Bands TDD_A						-120	-120
RSRP ^{Note4}	Bands TDD_C	dBm/15 kHz	-81.76	-81.76	-106.75	-106.75	-119	-119
	Bands TDD_E						-118	-118
RSRQ ^{Note4}	Bands TDD_A, TDD_C, TDD_E	dB	-14.77	-14.77	-16.76	-16.76	-17.34	-17.34
	Bands TDD_A						-85	.67
lo ^{Note4}	Bands TDD_C	dBm/9 MHz	-50	-50	-73	-73	-84	.67
	Bands TDD_E						-83.67	
\hat{E}_s	N_{oc}	dB	3	3	-2.9	-2.9	-4	-4
	tion condition	-	AW	'GN	AW	'GN	AW	'GN
	enacial subframe and	unlink-downlink	configuration	ne saa Ta	hlas 1 2-1	and 4 2-2 i		

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 4: RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

Note 6: E-UTRA operating band groups are as defined in Section 3.5.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

A.9.2.2.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Sections 9.1.5.1.

A.9.2.3 FDD—FDD Inter frequency case

A.9.2.3.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.6.1 and 9.1.6.2.

A.9.2.3.2 Test parameters

In this test case the two cells are on different carrier frequencies and measurement gaps are provided. Both RSRQ inter frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.2.3.2-1. In all tests, Cell 1 is the PCell and Cell 2 the target cell.

Table A.9.2.3.2-1: RSRQ FDD—FDD Inter frequency test parameters

			Tes	st 1	Te	st 2	Tes	13
Pa	rameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF C	hannel Number		1	2	1	2	1	2
BW _{channel}		MHz	10	10	10	10	10	10
Gap Pattern Id			0		0	-	0	-
Measurement	bandwidth	n_{PRB}	22-	-27	22-	–27	22—	-27
PDSCH Refer	ence measurement	TRD	R.0		R.0		D 0 EDD	
channel define			FDD	-	FDD	-	R.0 FDD	•
PDSCH alloca	tion	n_{PRB}	13—36	-	13—36	-	13—36	-
PDCCH/PCFI0	CH/PHICH	TRB						
Reference me	asurement channel		R.6	FDD	R.6	FDD	R.6 FDD	
defined in A.3.								
OCNG Pattern			OP.1	OP.2	OP.1	OP.2	OP.1	OP.2
A.3.2.1.1 (OP.			FDD	FDD	FDD	FDD	FDD	FDD
A.3.2.1.2 (OP. PBCH_RA	2 FDD)							
PBCH_RB								
PSS RA								
SSS_RA								
PCFICH_RB		1						
PHICH_RA								
PHICH_RB		dB	0	0	0	0	0	0
PDCCH_RA								
PDCCH_RB								
PDSCH_RA								
OCNG_RA ^{Note}	PDSCH_RB							
OCNG_RB ^{Note}	1							
OCNG_KB	Bands FDD_A						-119.5	-119.5
	Bands FDD_B						-119	-119
	Bands FDD_C						-118.5	-118.5
$N_{oc}^{ m Note2}$	Bands FDD_D						-118	-118
TV oc	Bands FDD_E,	dBm/15 kHz	-80	-80	-104.70	-104.70	-117.5	-117.5
	FDD_F Note 5						117.0	117.0
	Bands FDD_G						-116.5	-116.5
	Bands FDD_H						-116	-116
$\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	<u> </u>	dB	-1.75	-1.75	-4.0	-4.0	-4.0	-4.0
L _s /L _{ot}	Davida EDD A	45	1.70	1.70	7.0	4.0		
	Bands FDD_A Bands FDD_B	-					-123.5 -123	-123.5
	Bands FDD_B Bands FDD_C						-123	-123 -122.5
	Bands FDD_D						-122	-122
RSRP ^{Note3}	Bands FDD F	dBm/15 kHz	-81.75	-81.75	-108.70	-108.70		
	FDD_F Note 5						-121.5	-121.5
	Bands FDD_G Note 7						-120.5	-120.5
	Bands FDD_H						-120	-120
	Bands FDD_A Bands FDD_B	1						
	Bands FDD_B Bands FDD_C							
	Bands FDD_D	1						
RSRQ ^{Note3}	Bands FDD F	dB	-14.76	-14.76	-16.25	-16.25	-16.25	-16.25
	FDD_F Note 5							
	Bands FDD_G							
	Bands FDD_H						00.00	00.00
	Bands FDD_A Bands FDD_B	-					-90.26 -89.76	-90.26 -89.76
. Note?	Bands FDD_B Bands FDD_C				-75.46	-75.46	-89.26	-89.76
Io ^{Note3}	Bands FDD_C Bands FDD_D	dBm/9 MHz	-50	-50			-88.76	-88.76
		1						
	Bands FDD_E, FDD_F Note 5						-88.26	-88.26

	Bands FDD_G Note 7						-87.26	-87.26
	Bands FDD_H						-86.76	-86.76
\hat{E}_s/N_{oc}		dB	-1.75	-1.75	-4.0	-4.0	-4.0	-4.0
Propagation	on condition	-	AW	'GN	AW	'GN	AWC	3N
Note 1:	OCNG shall be used sucl	n that both cell	s are fully	allocated a	nd a const	ant total tra	ansmitted pov	ver
	spectral density is achieved for all OFDM symbols.							
Note 2:	Interference from other co	ells and noise	sources no	t specified	in the test	is assume	d to be consta	ant over
	subcarriers and time and	shall be mode	lled as AW	'GN of app	ropriate po	wer for N_{α}	$^{\circ c}$ to be fulfill	ed.
Note 3:	RSRQ, RSRP and lo leve							
	are not settable parameter							- ,
Note 4:	RSRP and RSRQ minimu			cified assur	ming indep	endent inte	erference and	I noise at
	each receiver antenna po	•	•					
Note 5:	For Band 26, the tests sh	all be performe	ed with the	carrier free	quency of t	he assigne	d E-UTRA ch	nannel
	bandwidth within 865-894 MHz.							
Note 6:	Note 6: E-UTRA operating band groups are as defined in Section 3.5.							
Note 7:	Except Band 29 and Ban	d 32.						

A.9.2.3.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Sections 9.1.6.1 and 9.1.6.2.

A.9.2.4 TDD—TDD Inter frequency case

A.9.2.4.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.6.1 and 9.1.6.2.

A.9.2.4.2 Test parameters

In this test case the two cells are on different carrier frequencies and measurement gaps are provided. Both RSRQ inter frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.2.4.2-1 for TDD configuration 1 and in Table A.9.2.4.2-2 for TDD configuration 0. In all tests, Cell 1 is the PCell and Cell 2 the target cell.

Table A 9.2.4.2-1: RSRQ TDD—TDD Inter frequency test parameters for TDD configuration 1

Por	romotor	Unit	Tes	st 1	Tes	t 2	Tes	st 3
Par	ameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
	Channel Number		1	2	1	2	1	2
	V _{channel}	MHz	10	10	10	10	10	10
	Gap Pattern Id Special subframe configuration Note1		0	-	0	-	0	-
Uplink-downlink configuration Note1			6		6		6	
•			1		1		·	
	ent bandwidth	$n_{\it PRB}$	22-	–27	22—	-27	22-	–27
	ence measurement ined in A.3.1.1.2		R.0 TDD	-	R.0 TDD	-	R.0 TDD	-
PDSCH	H allocation	$n_{\it PRB}$	13—36	-	13—36	-	13—36	-
measurement A.:	H/PHICH Reference channel defined in 3.1.2.2			TDD	R.6 T	DD		TDD
	defined in A.3.2.2.1 A.3.2.2.2 (OP.2 TDD)		OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD
	CH_RA		100	100	100	100	טטו	100
PBO	CH_RB							
	SS_RA							
	SS_RA							
	ICH_RB CH_RA				0			0
	CH RB	dB	0	0		0	0	
	CH_RA	42				Ŭ		
	CH_RB							
	SCH_RA							
	SCH_RB G_RA ^{Note2}							
OCN	G_RB ^{Note2}							
	Bands TDD_A						-119.50	-119.50
$N_{oc}^{ m Note3}$	Bands TDD_C	dBm/15 kHz	-80	-80	-104.70	- 104.70	-118.50	-118.50
	Bands TDD_E					104.70	-117.50	-117.50
Ê	$I_{\rm ot}$	dB	-1.75	-1.75	-4.0	-4.0	-4.0	-4.0
	Bands TDD_A						-123.50	-123.50
RSRP ^{Note4}	Bands TDD_C	dBm/15 kHz	-81.75	-81.75	-108.70	- 108.70	-122.50	-122.50
	Bands TDD_E					100.70	-121.50	-121.50
RSRQ ^{Note4}	Bands TDD_A, TDD_C, TDD_E	dB	-14.76	-14.76	-16.25	-16.25	-16.25	-16.25
	Bands TDD_A						-90.26	-90.26
Io ^{Note4}	Bands TDD_C	dBm/9 MHz	-50	-50	-75.46	-75.46	-89.26	-89.26
	Bands TDD_E						-88.26	-88.26
	$/N_{oc}$	dB	-1.75	-1.75	-4.0	-4.0	-4.0	-4.0
	tion condition	-		GN	AWO			'GN

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 4: RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

Note 6: E-UTRA operating band groups are as defined in Section 3.5.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Table A 9.2.4.2-2: RSRQ TDD—TDD Inter frequency test parameters for TDD configuration 0

Par	rameter	Unit	Tes	st 1	Tes	t 2	Tes	st 3
		Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
	Channel Number		1	2	1	2	1	2
	V _{channel}	MHz	10	10	10	10	10	10
	Pattern Id		0	<u>-</u>	0 -		0	-
	ne configuration Note1			6	6		6	
Uplink-downlin	k configuration Note1		-	0	0			-
	nent bandwidth	$n_{{\scriptscriptstyle PRB}}$	22-	–27	22—	-27	22-	–27
	ence measurement ined in A.3.1.1.2		R.5 TDD	-	R.5 TDD	-	R.5 TDD	-
PDSCI	H allocation	$n_{\it PRB}$	13—36	-	13—36	-	13—36	-
measurement A.	H/PHICH Reference channel defined in 3.1.2.2			TDD	R.6 T			TDD
	defined in A.3.2.2.1 A.3.2.2.2 (OP.2 TDD)		OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD
	CH_RA							
	CH_RB							
	SS_RA							
	SS_RA							
	FICH_RB ICH_RA				0			0
	ICH_RB	dB	0	0		0	0	
	CCH_RA	uБ		0		0		
PDC	CCH_RB							
	SCH_RA							
	SCH_RB							
OCN	G_RA ^{Note2}							
OCN	G_RB ^{Note2}							
$N_{oc}^{ m Note3}$	Bands TDD_A					_	-119.50	-119.50
oc oc	Bands TDD_C	dBm/15 kHz	-80	-80	-104.70	104.70	-118.50	-118.50
	Bands TDD_E						-117.50	-117.50
Ê	$E_{\rm s}/I_{ m ot}$	dB	-1.75	-1.75	-4.0	-4.0	-4.0	-4.0
	Bands TDD_A						-123.50	-123.50
RSRP ^{Note4}	Bands TDD_C	dBm/15 kHz	-81.75	-81.75	-108.70	108.70	-122.50	-122.50
	Bands TDD_E						-121.50	-121.50
RSRQ ^{Note4}	Bands TDD_A, TDD_C, TDD_E	dB	-14.76	-14.76	-16.25	-16.25	-16.25	-16.25
	Bands TDD_A						-90.26	-90.26
lo ^{Note4}	Bands TDD_C	dBm/9 MHz	-50	-50	-75.46	-75.46	-89.26	-89.26
	Bands TDD_E						-88.26	-88.26
\hat{E}_{s}	$_{\rm s}/N_{oc}$	dB	-1.75	-1.75	-4.0	-4.0	-4.0	-4.0
	tion condition	-		/GN	AWO			'GN
Note 1. For s	enacial subframe and	unlink-downlink	configuratio	ne saa Tal	Nec / 2-1 a	and 1 2-2	in TS 36 2	11

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

A.9.2.4.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Sections 9.1.6.1 and 9.1.6.2.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 4: RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

Note 6: E-UTRA operating band groups are as defined in Section 3.5.

A.9.2.4A FDD—TDD Inter frequency case

A.9.2.4A.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.6.1 and 9.1.6.2 for FDD—TDD inter frequency measurements.

A.9.2.4A.2 Test parameters

In this set of test cases the two cells are on different carrier frequencies. Both absolute and relative accuracy of RSRQ inter frequency measurements are tested by using the parameters in Table A.9.2.4A.2-1 and Table A.9.2.4A.2-2. In all test cases, Cell 1 is the PCell and Cell 2 the target cell. Cell 1 is FDD cell and Cell 2 is TDD cell. The inter frequency measurements are supported by a measurement gap.

Table A.9.2.4A.2-1: RSRQ FDD—TDD Inter frequency test parameters (FDD Cell1)

Deverator	He!4	Test 1	Test 2	Test 3
Parameter	Unit	Cell 1	Cell 1	Cell 1
E-UTRA RF Channel Number		1	1	1
BW _{channel}	MHz	10	10	10
Gap Pattern Id		0	0	0
Measurement bandwidth	n_{PRB}	22—27	22—27	22—27
PDSCH Reference measurement channel defined in A.3.1.1.1		R.0 FDD	R.0 FDD	R.0 FDD
PDSCH allocation	$n_{\it PRB}$	13—36	13—36	13—36
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.1		R.6 FDD	R.6 FDD	R.6 FDD
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD)		OP.1 FDD	OP.1 FDD	OP.1 FDD
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RA PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RA OCNG_RB Note1	dB	0	0	0
$N_{oc}^{ m Note2}$	dBm/15 kHz	-80	-104.70	-114.5
\hat{E}_{s}/I_{ot}	dB	-1.75	-4.0	-4.0
RSRP ^{Note3}	dBm/15 kHz	-81.75	-108.70	-118.5
RSRQ ^{Note3}	dB	-14.76	-16.25	-16.25
Io ^{Note3}	dBm/9 MHz	-50	-75.46	-85.26
\hat{E}_s/N_{oc}	dB	-1.75	-4.0	-4.0
Propagation condition	-	AWGN	AWGN	AWGN

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

Table A.9.2.4A.2-2: RSRQ FDD—TDD Inter frequency test parameters (TDD cell2)

Parameter	Unit	Test 1	Test 2	Test 3
	Offic	Cell 2	Cell 2	Cell 2
E-UTRA RF Channel Number		2	2	2
BW _{channel}	MHz	10	10	10
Gap Pattern Id		-	-	-
Special subframe configuration		6	6	6
Uplink-downlink configuration Note1		1	1	1
Measurement bandwidth	$n_{\it PRB}$	22—27	22—27	22—27
PDSCH Reference measurement channel		-	-	-
PDSCH allocation	n_{PRB}	-	-	-
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.2		R.6 TDD	R.6 TDD	R.6 TDD
OCNG Patterns defined in A.3.2.2.2 (OP.2 TDD)		OP.2 TDD	OP.2 TDD	OP.2 TDD
PBCH_RA				
PBCH_RB				
PSS_RA				
SSS_RA				
PCFICH_RB				
PHICH_RA				
PHICH_RB	dB	0	0	0
PDCCH_RA				
PDCCH_RB				
PDSCH_RA				
PDSCH_RB				
OCNG_RA ^{Note2}				
OCNG_RB ^{Note2}				
$N_{oc}^{ m Note3}$	dBm/15 kHz	-80	-104.70	-114.50
\hat{E}_{s}/I_{ot}	dB	-1.75	-4.0	-4.0
RSRP ^{Note4}	dBm/15 kHz	-81.75	-108.70	-118.50
PSPO ^{Note4}	dB	-14.76	-16.25	-16.25
Io ^{Note4}	dBm/9 MHz	-50	-75.46	-85.26
\hat{E}_s/N_{oc}	dB	-1.75	-4.0	-4.0
Propagation condition	-	AWGN	AWGN	AWGN

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 4: RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They

are not settable parameters themselves.

Note 5: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

A.9.2.4A.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in sections 9.1.6.1 and 9.1.6.2.

A.9.2.5 FDD RSRQ for E-UTRA Carrier Aggregation

A.9.2.5.1 Test Purpose and Environment

The purpose of this test is to verify that the FDD RSRQ measurement accuracy in carrier aggregation is within the specified limits under AWGN propagation conditions. This test will verify the absolute accuracy of intra-frequency

RSRQ measurements for the primary component carrier specified in clause 9.1.11.1, the absolute accuracy of intra-frequency RSRQ measurements for the secondary component carrier specified in clause 9.1.11.2 and also the relative inter-frequency RSRQ accuracy requirement between primary and secondary component carriers specified in clause 9.1.11.3.

A.9.2.5.2 Test parameters

In this test case the PCell and the SCell are on different carrier frequencies. There are three cells used in this test case. Both RSRQ absolute and relative accuracy requirements of the primary and secondary component carrier are tested by using test parameters specified in Table A.9.2.5.2-1. In the test, Cell 1 is the PCell, Cell 2 is the SCell on the Secondary Component Carrier (SCC) and Cell 3 is the neighbouring cell on the SCC. The SCC is configured and activated.

Table A.9.2.5.2-1: FDD RSRQ Carrier Aggregation test parameters

B			Tes	st 1	
Param		Units	Cell 1	Cell 2	Cell 3
E-UTRA RF Channel N	Number		1	2	2
BW _{channel_CA} Timeing offset to Cell 1		MHz	10	10	10
Time alignment error between cell 2 and cell 1		μѕ	-	0 ≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1	-
Measurement bandwid	lth	$n_{\it PRB}$	22—27	22—27	22—27
PDSCH Reference me defined in A.3.1.1.1	easurement channel		R.0 FDD	R.0 FDD	-
PDSCH allocation		n_{PRB}	13—36	13—36	-
PDCCH/PCFICH/PHIC measurement channel	defined in A.3.1.2.1		R.6 FDD	R.6FDD	R.6 FDD
OCNG Patterns define FDD) and A.3.2.1.2 (O			OP.1 FDD	OP.1 FDD	OP.2 FDD
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RA OCNG_RB POCNG_RB		dB	0	0	0
$N_{oc}^{$	Bands FDD_A Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 6 Bands FDD_G Bands FDD_G Bands FDD_H	dBm/15 kHz	-119.5 -119 -118.5 -118 -117.5 -116.5 -116	-116 -115.5 -115 -114.5 -114 -113 -112.5	-116 -115.5 -115 -114.5 -114 -113 -112.5
\hat{E}_{s}/I_{ot}		dB	-4.0	-5.46	-5.46
RSRP ^{Note3}	Bands FDD_A Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 6 Bands FDD_G Bands FDD_G Bands FDD_H	dBm/15 kHz	-123.5 -123 -122.5 -122 -121.5 -120.5 -120	-120 -119.5 -119 -118.5 -118 -117 -116.5	-120 -119.5 -119 -118.5 -118 -117 -116.5
RSRQ ^{Note3}	Bands FDD_A Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Note 6 Bands FDD_G Bands FDD_G Bands FDD_H Bands FDD_H Bands FDD_H	dB	-16.25 -90.26	-17.34 -85.67	-17.34 -85.67

	Bands FDD_B	MHz	-89.76	-85.17	-85.17	
	Bands FDD_C		-89.26	-84.67	-84.67	
	Bands FDD_D		-88.76	-84.17	-84.17	
	Bands FDD_E, FDD_F Note 6		-88.26	-83.67	-83.67	
	Bands FDD_G		-87.26	-82.67	-82.67	
	Bands FDD_H		-86.76	-82.17	-82.17	
\hat{E}_s/N_{oc}		dB	-4.0	-4.0	-4.0	
Propagation	on condition	-		AWGN		
Note 1:	OCNG shall be used such that both	n cells are full	y allocated a	nd a constant	t total	
	transmitted power spectral density is achieved for all OFDM symbols.					
Note 2:	Note 2: Interference from other cells and noise sources not specified in the test is assumed to					
	be constant over subcarriers and tir	me and shall	be modelled	as AWGN of		
	appropriate power for N_{oc} to be fu	lfilled.				
Note 3:	RSRQ, RSRP and lo levels have be		rom other par	ameters for i	nformation	
	purposes. They are not settable pa					
Note 4:	RSRP and RSRQ minimum require			ning indepen	dent	
	interference and noise at each rece	iver antenna	port.			
Note 5:	The selection of the bands for testir	ng depends o	n the configu	ration of the	carrier	
	aggregation supported by the UEs					
Note 6:	For Band 26, the tests shall be perf	ormed with the	ne carrier frec	quency of the	assigned	
	E-UTRA channel bandwidth within		==			
Note 7:	This test verifies the RRM requirem				andwidth	
	and is performed according to the principle defined in section A.3.6.1.					
Note 8:	E-UTRA operating band groups are	e as defined in	n Section 3.5			

A.9.2.5.3 Test Requirements

In the test, the RSRQ measurement accuracy in carrier aggregation shall fulfil the requirements in clause 9.1.11.1, 9.1.11.2, and 9.1.11.3.

- The absolute accuracy of intra-frequency RSRQ measurements of Cell 1 on the primary component carrier shall fulfil the requirements specified in clause 9.1.11.1.
- The absolute accuracy of intra-frequency RSRQ measurements of Cell 2 on the secondary component carrier shall fulfil the requirements specified in clause 9.1.11.2
- The relative accuracy of inter-frequency RSRQ measurements between the primary and secondary component carriers for Cell 2 relative to Cell 1 shall fulfil the requirements specified in clause 9.1.11.3.

A.9.2.6 TDD RSRQ for E-UTRA Carrier Aggregation

The test case in this clause are applicable to carrier aggregation capable UEs which have been configured with a downlink Scell.

A.9.2.6.1 Test Purpose and Environment

The purpose of this test is to verify that the TDD RSRQ measurement accuracy in carrier aggregation is within the specified limits in a synchronized network environment with AWGN propagation conditions. This test will verify the absolute accuracy of intra-frequency RSRQ measurements for the primary component carrier defined in Clause 9.1.11.1, the absolute accuracy of intra-frequency RSRQ measurements for the secondary component carrier defined in Clause 9.1.11.2, and also the relative inter-frequency RSRQ accuracy requirement between primary and secondary component carriers defined in Clause 9.1.11.3.

A.9.2.6.2 Test parameters

In the test there are three synchronous cells: Cell 1, Cell 2 and Cell 3. Cell 1 is PCell, Cell 2 is SCell, and Cell 3 is the target cell. PCell and SCell are in different RF channels. Cell 3 is in the same RF channel as Cell 2. The parameters for the test are listed in Table A.9.2.6.2-1.

Table A.9.2.6.2-1: TDD RSRQ test parameters

Para	meter	Unit		Test 1	
			Cell 1	Cell 2	Cell 3
E-UTRA RF Char BW _{channel}	inei ivuitiber	MHz	1	2 10	2
Timing offset to ce	ell 1	μS	_	0	3
Time alignment el and cell 1	ror between cell 2	μο	-	≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1	-
Special subframe	configuration Note1			6	
Uplink-downlink c				1	
Measurement bar		n_{PRB}		22—27	_
PDSCH Reference channel defined in			R.0 TDD -		
PDSCH allocation		n_{PRB}	13—36	13—36	-
measurement cha A.3.1.2.2			R.6 TDD	R.6 TDD	R.6 TDD
OCNG Patterns defined in A.3.2.2.1 (OP.1 TDD) and A.3.2.2.2 (OP.2 TDD)			OP.1 TDD	OP.1 TDD	OP.2 TDD
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RA PDCCH_RA PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RA OCNG_RA POCNG_RB OCNG_RB		dB	0	0	0
$N_{oc\ Note3}$	Bands TDD_A	dBm/15 kHz	-119.5	-11	
	Bands TDD_C	UBIII/15 KHZ	-118.5	-11	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	Bands TDD_E	dB	-117.5 -4.0	-11 -5.46	-5.46
L _s /L _{ot}	Bands TDD_A	QD	-123.50	-120	-120
RSRP ^{Note4}	Bands TDD_C	dBm/15 kHz	-122.50	-119	-119
	Bands TDD_E		-121.50	-118	-118
RSRQ ^{Note4}	Bands TDD_A, TDD_C, TDD_E	dB	-16.25	-17.34	
	Bands TDD_A		-90.26	-85.	67
Io ^{Note4}	Bands TDD_C	dBm/9 MHz	-89.26	-84.	67
	Bands TDD_E		-88.26	-83.	67
\hat{E}_s/N_{oc} dB -4.0 -4.0			-4.0	-4.0	
Propagation cond	ition	-		AWGN	

Note 1:	For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.
Note 2:	OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
Note 3:	Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled
	as AWGN of appropriate power for N_{oc} to be fulfilled.
	as AWGN of appropriate power for $\frac{\partial \mathcal{L}}{\partial \mathcal{L}}$ to be fulfilled.
Note 4:	RSRQ, RSRP and lo levels have been derived from other parameters for
	information purposes. They are not settable parameters themselves.
Note 5:	RSRP and RSRQ minimum requirements are specified assuming
	independent interference and noise at each receiver antenna port.
Note 6:	The selection of the bands for testing depends on the configuration of the
11010 0.	carrier aggregation supported by the UEs.
Note 7:	This test verifies the RRM requirement which is independent of channel
	bandwidth and is performed according to the principle defined in section
	A.3.6.1.
Nata O	
Note 8:	E-UTRA operating band groups are as defined in Section 3.5.

A.9.2.6.3 Test Requirements

In the test, the RSRQ measurement accuracy in carrier aggregation shall fulfil the requirements in section 9.1.11.1, 9.1.11.2, and 9.1.11.3.

- The absolute accuracy of intra-frequency RSRQ measurements of Cell 1 on the primary component carrier shall fulfil the requirements defined in clause 9.1.11.1.
- The absolute accuracy of intra-frequency RSRQ measurements of Cell 2 on the secondary component carrier shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of inter-frequency RSRQ measurements between the primary and secondary component carriers for Cell 2 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.11.3.

A.9.2.7 FDD RSRQ under Time Domain Measurement Resource Restriction with Non-MBSFN ABS

A.9.2.7.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy under time domain measurement resource restriction is within the specified limits. This test will verify the requirements in Clause 9.1.5.2 for FDD intra frequency measurements under time domain measurement resource restriction.

A.9.2.7.2 Test parameters

In this test case all cells are on the same carrier frequency. The absolute accuracy of RSRQ intra frequency measurements under time domain measurement resource restriction is tested by using the parameters in Table A.9.2.7.2-1 and Table A.9.2.7.2-2 for non-MBSFN ABS with non-colliding CRS. In all test cases, Cell 1 is the serving cell and also the aggressor cell to Cell 2. Cell 2 is the target cell to be measured for RSRQ.

The UE is configured by higher layers via Cell 1 with a time-domain measurement resource restriction pattern for performing E-UTRAN FDD intra-frequency measurements on neighbour cells and provided with a neighbour cell list associated with the pattern, where the cell list includes Cell 2. The UE is also configured with a time-domain measurement resource restriction pattern for the serving cell measurements. The information for both patterns shall be provided to the UE before the measurements start.

Table A.9.2.7.2-1: General test parameters for E-UTRAN FDD RSRQ intra frequency test parameters under time-domain measurement resource restriction with non-MBSFN ABS

Parameter	Unit	Value	Comment
Serving cell (PCell)		Cell 1	The aggressor cell to Cell 2
Neighbour cell		Cell 2	Cell to be measured
PCell ABS configuration		Non-MBSFN ABS	As defined in Table A.3.4.1.1-1
CP length		Normal	For both cells in the test
DRX			OFF
Time offset between cells		3 μs	Synchronous cells
Physical cell ID PCI		(PCI _{cell1} - PCI _{cell2})mod6	Cell PCIs for Cell 1 and Cell 2 are selected
·		!=0	randomly so that the condition is met.
ABS pattern		'10000000100000001000	Non-MBSFN ABS. FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54.
		00001000000010000000	Configured in Cell 1.
		00001000000010000000	The first/leftmost bit corresponds to the
			subframe #0 of a radio frame satisfying SFN
			mod x = 0, where x is the size of the bit string
			(40) divided by 10. No MBSFN subframes are
			cofigured in the ABS subframes in Cell 1.
Time-domain measurement			Configured for Cell 2 measurements by
resource restriction pattern for		10000000100000001000	measSubframePattern-Neigh IE in
neighbour cell measurements on		00001000000010000000	measSubframePatternConfig-Neigh, as defined
RF Channel 1			in TS 36.331 [2], clause 6.3.5.
			measSubframeCellList contains Cell 2.
Time-domain measurement		'010000001000000100	Configured for measurements on Cell 1.
resource restriction pattern for		00000100000001000000	
serving cell measurements			

Table A.9.2.7.2-2: Cell-specific test parameters for E-UTRAN FDD RSRQ intra frequency test parameters under time domain measurement resource restriction with non-MBSFN ABS

D-		1124	Tes	st 1	Tes	st 2	Tes	st 3
	rameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF Ch	nannel Number			•		1		
BW _{channel}		MHz	10		10		10	
Measurement b		$n_{\it PRB}$	22-	–27	22-	–27	22-	–27
	ence measurement		R.0	-	R.0	-	R.0	-
channel define			FDD		FDD		FDD	
PDSCH allocat		$n_{\it PRB}$	13—36	-	13—36	-	13—36	-
	asurement channel		R.6	FDD	R.6	FDD	R.6	FDD
defined in A.3.			11.0	. 55	14.0	. 55	11.0	
OCNG Pattern			OP.5	OP.6	OP.5	OP.6	OP.5	OP.6
A.3.2.1.5 (OP.5			FDD	FDD	FDD	FDD	FDD	FDD
A.3.2.1.6 (OP.6 PBCH RA	טרטט)							
PBCH_RB								
PCFICH_RB								
PHICH_RA								
PHICH_RB PDCCH_RA		dB	Note 6	0	Note 6	0	Note 6	0
PDCCH_RB		ub	NOTE	J	NOLE	0	NOIE 0	U
PDSCH_RA								
PDSCH_RB								
OCNG_RA ^{Note1}								
OCNG_RB ^{Note1} PSS_RA		dB	-4	0	-4	0	-4	0
SSS_RA		dB	-4	0	-4	0	-4	0
	Bands FDD_A	42			. , ,		-1	-
	Bands FDD_B							5.5
	Bands FDD_C		-84.76				-1	
$N_{oc}^{ m Note2}$	Bands FDD_D	dBm/15 kHz			-10	3.85	-114.5	
	Bands FDD_E, FDD_F Note 7	abilii io ki iz			100.00		-114	
	Bands FDD_G						-113	
	Bands FDD_H						-11	
CRS \hat{E}_s/N_{oc}		4D		2		2		
		dB	5	-2	5	-2	5	-4
CRS (\hat{E}_s/I_{ot})	Note 5 meas	dB	2.88	-2.00	2.88	-2.00	3.54	-4.00
SCH \hat{E}_{s}/I_{ot}		dB	-1.12	-5.54	-1.12	-5.54	-0.46	-7.54
	Bands FDD_A						-111	-120
	Bands FDD_B						-110.5	-119.5
	Bands FDD_C Bands FDD_D						-110 -109.5	-119 -118.5
RSRP ^{Note3,4,5}		dBm/15 kHz	-79.76	-86.76	-98.85	-105.85		
	Bands FDD_E, FDD_F Note 7						-109	-118
	Bands FDD_G Note 9						-108	-117
	Bands FDD_H						-107.5	-116.5
	Bands FDD_A,							
$(RSRQ)_{meas}$	FDD_B, FDD_C,	-ID	40.00	45.00	40.00	45.00	40.00	40.00
Note3,4,5	FDD_E, FDD_F Note 7, FDD_G Note	dB	-12.60	-15.30	-12.60	-15.30	-12.38	-16.69
	9, FDD_H							
	,							
	Bands FDD_A						-81.63	-85.37
$(Io)_{meas}^{Note3}$	Bands FDD_B	dBm/9 MHz	-50.17	-53.64	-69.26	-72.73	-81.13	-84.87
· / meus	Bands FDD_C		I		I		-80.63	-84.37

Propagation condition	-	AWGN	AWGN	AW	'GN
Bands FDD_H				-78.13	-81.87
Bands FDD_G Note 9				-78.63	-82.37
Bands FDD_E, FDD_F Note 7				-79.63	-83.37
Bands FDD_D				-80.13	-83.87

- Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. Applies to all subframes.
- Note 3: RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io levels are calculated in CRS symbols of measurement restricted subframes.
- Note 4: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
- Note 5: Applies to restricted measurement subframes of the respective cell.
- Note 6: Non-ABS and ABS subframe channel powers defined in Table A.3.4.1.1-1.
- Note 7: For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.
- Note 8: E-UTRA operating band groups are as defined in Section 3.5.
- Note 9: Except Band 29 and Band 32.

A.9.2.7.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Clause 9.1.5.2.

A.9.2.8 TDD RSRQ under Time Domain Measurement Resource Restriction with Non-MBSFN ABS

A.9.2.8.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy under time domain measurement resource restriction is within the specified limits. This test will verify the requirements in Clause 9.1.5.2 for TDD intra frequency measurements under time domain measurement resource restriction.

A.9.2.8.2 Test parameters

In this test case all cells are on the same carrier frequency. The absolute accuracy of RSRQ intra frequency measurements under time domain measurement resource restriction is tested by using the parameters in Table A.9.2.8.2-1 and Table A.9.2.8.2-2 for non-MBSFN ABS with non-colliding CRS. In all test cases, Cell 1 is the serving cell and also the aggressor cell to Cell 2. Cell 2 is the target cell to be measured for RSRQ.

The UE is configured by higher layers via Cell 1 with a time-domain measurement resource restriction pattern for performing E-UTRAN TDD intra-frequency measurements on neighbour cells and provided with a neighbour cell list associated with the pattern, where the cell list includes Cell 2. The UE is also configured with a time-domain measurement resource restriction pattern for the serving cell measurements. The information for both patterns shall be provided to the UE before the measurements start.

Table A.9.2.8.2-1: General test parameters for E-UTRAN TDD RSRQ intra frequency test parameters under time domain measurement resource restriction with non-MBSFN ABS

Parameter	Unit	Value	Comment
Serving cell (PCell)		Cell 1	Also the aggressor cell.
Neighbour cell		Cell 2	Cell to be measured
PCell ABS configuration		Non-MBSFN ABS	As defined in Table A.3.4.1.1-1
Special subframe configuration		6	For Cell 1 and Cell 2. For special subframe
			configurations see Table 4.2-1 in [16].
Uplink/downlink subframe		1	For Cell 1 and Cell 2. For uplink-downlink
configuration			subframe configurations see Table 4.2-2 in [16].
CP length		Normal	For both cells in the test
DRX			OFF
Time offset between cells		3 μs	Synchronous cells
Physical cell ID PCI		(PCI _{cell1} - PCI _{cell2})mod6	Cell PCIs for Cell 1 and Cell 2 are randomly
•		!=0	selected so that the condition is met
ABS pattern		'000000001000000001'	Non-MBSFN ABS. TDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 1. The first/leftmost bit corresponds to the subframe #0 of a radio frame satisfying SFN mod x = 0, where x is the size of the bit string (20) divided by 10. No MBSFN subframes are cofigured in the ABS subframes in Cell 1.
Time-domain measurement resource restriction pattern for neighbour cell measurements on RF Channel 1		'000000001000000001'	Configured for Cell 2 measurements by measSubframePattern-Neigh IE in measSubframePatternConfig-Neigh, as defined in TS 36.331 [2], clause 6.3.5. measSubframeCellList contains Cell 2.
Time-domain measurement resource restriction pattern for serving cell measurements		'10000000001000000000'	Configured for Cell 1 measurements.

Table A.9.2.8.2-2: Cell-specific test parameters for E-UTRAN TDD RSRQ intra frequency test parameters under time domain measurement resource restriction with non-MBSFN ABS

Parameter		Unit	Tes	st 1	Test 2		Test 3		
			Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2	
E-UTRA RF Ch	annel Number			1		1	,		
BW _{channel}		MHz	10		1	0	1	0	
Measurement b		n_{PRB}		–27		–27		–27	
PDSCH Refere channel defined	nce measurement		R.0 TDD	-	R.0 TDD	-	R.0 TDD	-	
PDSCH allocati		n_{PRB}	13—36	-	13—36	-	13—36	-	
PDCCH/PCFIC		PRB	10 00		10 00		10 00		
	surement channel		R.6	TDD	R.6	TDD	R.6	TDD	
OCNG Patterns A.3.2.2.1 (OP.1 A.3.2.2.2 (OP.2	TDD) and		OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD	
PBCH_RA PBCH_RB PCFICH_RB									
PHICH_RA PHICH_RB				_		_	Note 6	0	
PDCCH_RA PDCCH_RB		dB	Note 6	0	Note 6	0			
PDSCH_RA PDSCH_RB OCNG_RA ^{Note1}									
OCNG_RB ^{Note1}									
PSS_RA		dB	-4	0	-4	0	-4	0	
SSS_RA		dB	-4	0	-4	0	-4	0	
$N_{oc}^{ m Note2}$	Bands TDD_A						-116		
oc .	Bands TDD_C Bands TDD_E	dBm/15 kHz	-84	.76	-103.85		-115 -114		
CRS \hat{E}_s/N_{oc}		dB	5	-2	5	-2	5	-4	
CRS (\hat{E}_{s}/I_{ot})	Note 5 meas	dB	2.88	-2.00	2.88	-2.00	3.54	-4.00	
SCH \hat{E}_{s}/I_{ot}		dB	-1.12	-5.54	-1.12	-5.54	-0.46	-7.54	
Noto2 4 F	Bands TDD_A						-111	-120	
RSRP ^{Note3,4,5}	Bands TDD_C	dBm/15 kHz	-79.76	-86.76	-98.85	-105.85	-110	-119	
	Bands TDD_E						-109	-118	
(RSRQ) _{meas}	Bands TDD_A, TDD_C, TDD_E	dB	-12.60	-15.30	-12.60	-15.30	-12.38	-16.70	
(Io) _{meas} Note3	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/9 MHz	-50.17	-53.64	-69.26	-72.73	-81.63 -80.63 -79.63	-85.37 -84.37 -83.37	
Propagation co		_	Δ\Λ	I 'GN	Δ\Λ	GN			
	IG shall be used such	that both cells a					AWGN		

- Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. Applies to all subframes.
- Note 3: RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io levels are calculated in CRS symbols of measurement restricted subframes.
- Note 4: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
- Note 5: Applies to restricted measurement subframes of the respective cell.
- Note 6: Non-ABS and ABS subframe channel powers defined in Table A.3.4.1.1-1.
- Note 7: E-UTRA operating band groups are as defined in Section 3.5.

A.9.2.8.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Clause 9.1.5.2.

A.9.2.9 FDD RSRQ under Time Domain Measurement Resource Restriction with MBSFN ABS

A.9.2.9.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy under time domain measurement resource restriction is within the specified limits under AWGN propagation conditions. This test will verify the absolute FDD RSRQ accuracy under time domain measurement resource restriction specified in Clause 9.1.5.2.

A.9.2.9.2 Test parameters

The test parameters are given in Tables A.9.2.9.2-1 and A.9.2.9.2-2 below. In this test case there are two cells on the same frequency used in this test case. In the test, Cell 1 is the serving cell and also the aggressor cell to Cell 2. Cell 2 is the target cell to be measured for RSRQ.

The UE is configured by higher layers via Cell 1 with a time-domain measurement resource restriction pattern for performing E-UTRAN FDD intra-frequency measurements on neighbour cells and provided with a neighbour cell list associated with the pattern, where the cell list includes Cell 2. The UE is also configured by higher layers with a time domain measurement restriction pattern for the serving cell measurements. The information for both patterns shall be provided to the UE before the measurements start.

Table A.9.2.9.2-1: General test parameters for FDD RSRQ under time domain measurement resource restriction with MBSFN ABS

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
Serving cell (PCell)		Cell 1	Also the aggressor cell on E-UTRA RF channel number 1
Neighbour cell		Cell 2	Cell to be identified on E-UTRA RF channel number 1
PCell ABS configuration		MBSFN ABS	As defined in Table A.3.4.2.1-1
CP length		Normal	
DRX		OFF	
Time offset between cells		3 μs	Synchronous cells
Physical cell ID PCI		(PCI _{cell1} - PCI _{cell2}) mod 6 = 0, PCI _{cell1} not equal to PCI _{cell2}	Cell PCIs are selected so that the condition is met (colliding CRS)
Cell 1 MBSFN ABS pattern		'01000000100000001000 00000010000001000000	ABS subframe is only MBSFN subframe. FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. The first/leftmost bit corresponds to the subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. Configured in Cell 1.
Time domain measurement resource restriction pattern for PCell (Cell 1) measurements on RF Channel 1		'00010000000100000001 00000001000000010000'	Time domain measurement resource restriction pattern for PCell measurement signalled to the UE in measSubframePatternPCell. The IE MeasSubframePattern is used to specify the time domain measurement resource restriction as defined in TS 36.331 [2], clause 6.3.6. Configured for Cell 1 measurements.
Time domain measurement resource restriction pattern for neighbour cell (Cell 2) measurements on RF Channel 1		'01000000100000001000 00000010000001000000	Time domain measurement resource restriction pattern for neighbour cell measurement signalled to the UE in measSubframePatternNeigh The IE MeasSubframePattern is used to specify the time domain measurement resource restriction as defined in TS 36.331 [2], clause 6.3.6. Configured for Cell 2 measurements.

Table A.9.2.9.2-2: Cell specific test parameters for FDD RSRQ under time domain measurement resource restriction with MBSFN ABS

_			Tes	st 1	Tes	st 2	Tes	st 3
Par	ameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF Ch	annel Number		,			ĺ		1
BW _{channel}		MHz	1	0	1	0	1	0
OCNG Patterns			OP.8	OP.6	OP.8	OP.6	OP.8	OP.6
A.3.2.1.8 (OP.8 A.3.2.1.6 (OP.6	FDD) and FDD) Note5		FDD	FDD	FDD	FDD	FDD	FDD
Measurement b		n_{PRB}	22-	 –27	22-	 –27	22-	_27
PDSCH allocati		n_{PRB}	13—36	-	13—36	-	13—36	_
PBCH_RA		PRB						
PBCH_RB		-						
PCFICH_RB								
PHICH_RA								
PHICH_RB								
PDCCH_RA		dB	Note 6	0	Note 6	0	Note 6	0
PDCCH_RB		-						
PDSCH_RA PDSCH_RB		-						
OCNG_RA ^{Note1}		1						
OCNG_RB ^{Note1}		1						
PSS_RA		dB	-4	0	-4	0	-4	0
SSS_RA		dB	-4	0	-4	0	-4	0
	Bands FDD_A			· <u> </u>				16
	Bands FDD_B						-115.5	
	Bands FDD_C					,		15
$N_{oc}^{ m Note2}$	Bands FDD_D Bands FDD_E,	dBm/15 kHz	-84.76		-103.85		-114.5	
	FDD_F Note 8	dbiii/10 ki iz					-1	14
	Bands FDD_G Note 10						-1	13
	Bands FDD_H				,		-11	2.5
CRS \hat{E}_s/N_{oc}		dB	5	-2	5	-2	5	-4
1st OFDM symbo	Note 5, 7 in the	dB	2.88	-8.19	2.88	-8.19	3.54	-10.19
$CRS(\hat{F}/I_{Ot})$	note 5 in OFDM		1					
symbols 4,7,11	neas OI DIVI	dB	2.88	-2	2.88	-2	3.54	-4
SCH \hat{E}_s/I_{ot}		dB	-1.12	-5.54	-1.12	-5.54	-0.46	-7.54
	Bands FDD_A						-111	-120
	Bands FDD_B	j					-110.5	-119.5
	Bands FDD_C	_					-110	-119
RSRP Note 3,4,5	Bands FDD_D	4D=-/45 !!!	70.70	00.70	00.05	405.05	-109.5	-118.5
RSRP	Bands FDD_E, FDD_F Note 8	dBm/15 kHz	-79.76	-86.76	-98.85	-105.85	-109	-118
	Bands FDD_G Note 10						-108	-117
	Bands FDD_H	<u> </u>					-107.5	-116.5
	Bands FDD_A							
	Bands FDD_B							
	Bands FDD_C	-						
(RSRQ) meas Note 3,4,5	Bands FDD_D Bands FDD_E,	dB	-12.60	-15.02	-12.60	-15.02	-12.38	-16.36
Note 3,4,5	FDD_F Note 8	GD	12.00	10.02	12.00	10.02	12.00	10.30
	Bands FDD_G							
	Bands FDD_H	}						
(Io) meas Note 3	Bands FDD_A						-81.63	-85.37
1st OFDM	Bands FDD_B	dBm/9 MHz	-50.17	-53.64	-69.26	-72.73	-81.13	-84.87
symbol	Bands FDD_C						-80.63	-84.37

	Bands FDD_D						-80.13	-83.87
	Bands FDD_E, FDD_F Note 8						-79.63	-83.37
	Bands FDD_G Note 10						-78.63	-82.37
	Bands FDD_H						-78.13	-81.87
	Bands FDD_A						-81.63	-86.76
	Bands FDD_B						-81.13	-86.26
(Io) meas Note 3	Bands FDD_C						-80.63	-85.76
OFDM	Bands FDD_D						-80.13	-85.26
symbols other than the 1 st	Bands FDD_E, FDD_F Note 8	dBm/9 MHz	-50.17	-54.85	-69.26	-73.94	-79.63	-84.76
one	Bands FDD_G Note 10						-78.63	-83.76
	Bands FDD_H						-78.13	-83.26
Propagation cor	ndition	-	AW	'GN	AW	GN	AW	GN

- Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. Applies to all subframes.
- Note 3: RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io levels are calculated in CRS symbols of measurement restricted subframes
- Note 4: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
- Note 5: Applies to restricted measurement subframes of the respective cell.
- Note 6: Non-ABS and ABS subframe channel powers defined in Table A.3.4.2.1-1.
- Note 7: In the 1st OFDM symbol, Cell 2 is not expected to meet the Es/lot side condition in 9.1.5.2.
- Note 8: For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.
- Note 9: E-UTRA operating band groups are as defined in Section 3.5.
- Note 10: Except Band 29 and Band 32.

A.9.2.9.3 Test Requirements

In the test, the RSRQ measurement accuracy under time domain measurement resource restriction shall fulfil the requirements in Clause 9.1.5.2

A.9.2.10 TDD Intra frequency case under time domain measurement resource restriction with MBSFN ABS

A.9.2.10.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy under time domain measurement resource restriction is within the specified limits. This test will verify the requirements in Clause 9.1.5.2 for TDD intra frequency measurements under time domain measurement resource restriction.

A.9.2.10.2 Test parameters

In this test case all cells are on the same carrier frequency. The absolute accuracy of RSRQ intra frequency measurements under time domain measurement resource restriction is tested by using the parameters in Table A.9.2.10.2-1 and Table A.9.2.10.2-2 for MBSFN ABS with colliding CRS. In all test cases, Cell 1 is the serving cell and also the aggressor cell to Cell 2. Cell 2 is the target cell to be measured for RSRQ.

The UE is configured by higher layers via Cell 1 with a time-domain measurement resource restriction pattern for performing E-UTRAN TDD intra-frequency measurements on neighbour cells and provided with a neighbour cell list associated with the pattern, where the cell list includes Cell 2. The UE is also configured with a time-domain measurement resource restriction pattern for the serving cell measurements. The information for both patterns shall be provided to the UE before the measurements start.

Table A.9.2.10.2-1: General test parameters for E-UTRAN TDD RSRQ intra frequency test parameters under time-domain measurement resource restriction with MBSFN ABS

Parameter	Unit	Value	Comment
Serving cell (PCell)		Cell 1	The aggressor cell to Cell 2
Neighbour cell		Cell 2	Cell to be measured
PCell ABS configuration		MBSFN ABS	As defined in Table A.3.4.2.1-1
Special subframe configuration		6	For Cell 1 and Cell 2. For special subframe
			configurations see Table 4.2-1 in [16].
Uplink/downlink subframe		1	For Cell 1 and Cell 2. For uplink-downlink
configuration			subframe configurations see Table 4.2-2 in [16].
CP length		Normal	For both cells in the test
DRX			OFF
Time offset between cells		3 μs	Synchronous cells
Physical cell ID PCI		(PCI _{cell1} - PCI _{cell2})mod6	Cell PCIs for Cell 1 and Cell 2 are selected
		=0 PCI _{cell1} not equal to	randomly so that the condition is met
		PCI _{cell2}	
ABS pattern			MBSFN ABS pattern. TDD ABS Pattern Info IE,
		'0000100000000100000'	as defined in TS 36.423 [28], clause 9.2.54.
			Configured in Cell 1.
			The first/leftmost bit corresponds to the
			subframe #0 of a radio frame satisfying SFN
			mod x = 0, where x is the size of the bit string
			(20) divided by 10. All ABS subframes are
			MBSFN subframes.
Time-domain measurement			Configured for Cell 2 measurements by
resource restriction pattern for		'0000100000000100000'	measSubframePattern-Neigh IE in
neighbour cell measurements on			measSubframePatternConfig-Neigh, as defined
RF Channel 1			in TS 36.331 [2], clause 6.3.5.
			measSubframeCellList contains Cell 2.
Time-domain measurement		'100000000100000000'	Configured for measurements on Cell 1.
resource restriction pattern for			
serving cell measurements			

Table A.9.2.10.2-2: Cell-specific test parameters for E-UTRAN TDD RSRQ intra frequency test parameters under time domain measurement resource restriction with MBSFN ABS

Dore	· · · · · · · · · · · · · · · · · · ·	l lmit	Test 1		Test 2		Test 3	
	ameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF Cha	annel Number			-		1		1
BW _{channel}		MHz		0	10		10	
Measurement ba		$n_{\it PRB}$	22-	–27	22-	–27	22-	–27
PDSCH Referen	in A.3.1.1.2		R.0 TDD	-	R.0 TDD	-	R.0 TDD	-
PDSCH allocation	on	n_{PRB}	13—36	-	13—36	-	13—36	-
PDCCH/PCFICH Reference meas defined in A.3.1.	surement channel		R.6	TDD	R.6	TDD	R.6	TDD
OCNG Patterns A.3.2.2.5 (OP.5 A.3.2.2.2 (OP.2	defined in TDD) and		OP.5 TDD	OP.2 TDD	OP.5 TDD	OP.2 TDD	OP.5 TDD	OP.2 TDD
PBCH_RA PBCH_RB PCFICH_RB								
PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB		dB	Note 6	0	Note 6	0	Note 6	0
PDSCH_RA PDSCH_RB OCNG_RA ^{Note1} OCNG_RB ^{Note1}								
PSS_RA		dB	-4	0	-4	0	-4	0
SSS_RA		dB	-4	0	-4	0	-4	0
$N_{oc}^{ m Note2}$	Bands TDD_A Bands TDD_C	dBm/15 kHz	-84	.76	-103	3.85	-1	16 15
^ /	Bands TDD_E						-1	14
CRS \hat{E}_s/N_{oc}		dB	5	-2	5	-2	5	-4
In the 1st OFDM	Note 5, 7 Symbol	dB	2.88	-8.19	2.88	-8.19	3.54	-10.19
CRS $(\hat{E}_s/Iot)_m$ symbols 4,7,11	Note 5 in OFDM	dB	2.88	-2	2.88	-2	3.54	-4
SCH \hat{E}_s/I_{ot}		dB	-1.12	-5.54	-1.12	-5.54	-0.46	-7.54
RSRP Note 3,4,5	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/15 kHz	-79.76	-86.76	-98.85	-105.85	-111 -110 -109	-120 -119 -118
(RSRQ) _{meas} Note 3,4,5	Bands TDD_A, TDD_C, TDD_E	dB	-12.60	-15.02	-12.60	-15.02	-12.38	-16.36
(Io) _{meas} Note 3 in the 1 st OFDM symbol	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/9 MHz	-50.17	-53.64	-69.26	-72.73	-81.63 -80.63 -79.63	-85.37 -84.37 -83.37
$(Io)_{meas}^{Note 3}$ in OFDM symbols other	Bands TDD_A Bands TDD_C	dBm/9 MHz	-50.17	-54.85	-69.26	-73.94	-81.63 -80.63	-86.76 -85.76
than the 1 st one	Bands TDD_E		A144	GN	A1A4	GN	-79.63	-84.76
Propagation con	uiuOH	-	AVV	GIN	AVV	GIN	AVV	'GN

Note 1:	OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. Interference from other cells and noise sources not specified in the test is assumed to be constant over
14010 2.	
	subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
	Applies to all subframes.
Note 3:	RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io levels are calculated in CRS symbols of measurement restricted subframes.
Note 4:	RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
Note 5:	Applies to restricted measurement subframes of the respective cell.
Note 6:	Non-ABS and ABS subframe channel powers defined in Table A.3.4.2.1-1.
Note 7:	In the 1 st OFDM symbol, Cell 2 is not expected to meet the Es/lot side condition in 9.1.5.2.
Note 8:	F-UTRA operating band groups are as defined in Section 3.5.

A.9.2.10.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in clause 9.1.5.2.

A.9.2.11 FDD RSRQ for E-UTRA Carrier Aggregation (20MHz bandwidth)

The test case in this section are applicable to carrier aggregation capable UEs which have been configured with a downlink SCell.

A.9.2.11.1 Test Purpose and Environment

The purpose of this test is the same as defined in Subclause A.9.2.5.1.

A.9.2.11.2 Test parameters

The parameters of this test are the same as defined in Subclause A.9.2.5.2 except that the values of the parameters in the Table A.9.2.11.2-1 will replace the values of the corresponding parameters in A.9.2.5.2-1.

Table A.9.2.11.2-1: FDD RSRQ Carrier Aggregation test parameters

Donomotoro		Test 1							
P	arameters	Units	Cell 1	Cell 2	Cell 3				
BW _{channel}	Note 1 CA	MHz	20	20	20				
Measure	ment bandwidth	n_{PRB}	47-52	47-52	47-52				
PDSCH Reference measurement channel defined in A.3.1.1.1			R.4 FDD	R.4 FDD	-				
PDSCH a	allocation	n_{PRB}	38-61	38-61	-				
Referenc	PDCCH/PCFICH/PHICH Reference measurement channel defined in		R.10 FDD	R.10 FDD	R.10 FDD				
OCNG Patterns defined in A.3.2.1.11 (OP.11 FDD) and A.3.2.1.12 (OP.12 FDD)			OP.11 FDD	OP.11 FDD	OP.12 FDD				
	Bands FDD_A		-87.26	-82.67					
	Bands FDD_B Note 5		-86.76	-82.17					
N. a	Bands FDD_C Note 5	dBm/18	-86.26	-81.67					
Io ^{Note2}	Bands FDD_D Note 5	MHz	-85.76	-81.17					
	Bands FDD_E Note 5		-85.26	-80.67					
	Bands FDD_G Note 5		-84.26	-79.67					
	Bands FDD_H Note 5		-83.76	-79.17					
Note 1:	This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.								
Note 2:	Note 2: Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves								
Note 3:	See Table A.9.2.5.2-1 for the other parameters								
Note 4:	E-UTRA operating								
Note 5:	The test applies for E-UTRA operating bands in this band group which are supporting 20 MHz channel bandwidth.								

A.9.2.11.3 Test Requirements

The test requirements defined in section A.9.2.5.3 shall apply in this test case.

A.9.2.12 TDD RSRQ for E-UTRA Carrier Aggregation (20MHz bandwidth)

The test case in this section are applicable to carrier aggregation capable UEs which have been configured with a downlink SCell.

A.9.2.12.1 Test Purpose and Environment

The purpose of this test is the same as defined in Subclause A.9.2.6.1.

A.9.2.12.2 Test parameters

The parameters of this test are the same as defined in Subclause A.9.2.6.2 except that the values of the parameters in the Table A.9.2.12.2-1 will replace the values of the corresponding parameters in A.9.2.6.2-1.

Table A.9.2.12.2-1: TDD RSRQ Carrier Aggregation test parameters

Parameters		Test 1							
Par		Units	Cell 1	Cell 2	Cell 3				
BW _{channel_CA}	Note1	MHz	20	20	20				
Measureme	ent bandwidth	n_{PRB}	47-52	47-52	47-52				
measureme	DSCH Reference easurement channel efined in A.3.1.1.2		R.3 TDD	R.3 TDD	-				
PDSCH allo	ocation	n_{PRB}	38-61	38-61	-				
	FICH/PHICH measurement fined in		R.10 TDD	R.10 TDD	R.10 TDD				
	erns defined in DP.7 TDD) and DP.8 TDD)		OP.7 TDD	OP.7 TDD	OP.8 TDD				
	Bands TDD_A Note 5	dBm/18	-87.26	-82.67					
Io ^{Note2}	Bands TDD_C Note 5	MHz	-86.26	-81.67					
	Bands TDD_E Note 5		-85.26	-80.67					
Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.									
Note 2: Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves									
Note 3: See Table A.9.2.6.2-1 for the other parameters.									
	E-UTRA operating				ction 3.5.				
	The test applies for group which are s								

A.9.2.12.3 Test Requirements

The test requirements defined in section A.9.2.6.3 shall apply in this test case.

A.9.2.13 Void

A.9.2.13.1 Void

A.9.2.13.2 Void

Table A.9.2.13.2-1: Void

A.9.2.13.3 Void

A.9.2.14 Void

A.9.2.14.1 Void

A.9.2.14.2 Void

Table A.9.2.14.2-1: Void

A.9.2.14.3 Void

A.9.2.15 FDD RSRQ under Time Domain Measurement Resource Restriction with CRS Assistance Information and Non-MBSFN ABS

A.9.2.15.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy under time domain measurement resource restriction with CRS assistance information is within the specified limits. This test will verify the requirements in Clause 9.1.5.3 for FDD intra frequency measurements under time domain measurement resource restriction with CRS assistance information.

A.9.2.15.2 Test parameters

In this test case all cells are on the same carrier frequency. The absolute accuracy of RSRQ intra frequency measurements under time domain measurement resource restriction with CRS assistance information is tested by using the parameters in Table A.9.2.15.2-1 and Table A.9.2.15.2-2 for non-MBSFN ABS with colliding CRS between Cell1 and Cell3 and non-colliding CRS between Cell1 and Cell2. In all test cases, Cell 1 is the serving/aggressor cell, Cell2 is the neighbour/aggressor cell and Cell3 is the target cell to be measured for RSRQ.

The UE is configured by higher layers via Cell 1 with a time domain measurement resource restriction pattern for performing E-UTRAN FDD intra-frequency measurements on neighbour cells, namely Cell 3 measurements with a neighbour cell list, where the cell list includes Cell 3. The UE is also provided via higher layers with the CRS assistance information of Cell 2. The information for both measurement pattern and the CRS assistance information shall be provided to the UE before the measurements start.

Note: It's up to eNB's implementation whether the time domain measurement resource restriction pattern for PCell measurements is configured or not.

Table A.9.2.15.2-1: General test parameters for E-UTRAN FDD RSRQ intra frequency test parameters under time-domain measurement resource restriction with CRS assistance information and non-MBSFN ABS

Paran	neter	Unit	Value	Comment
PCell			Cell 1	Serving/aggressor cell
Neighbour cells			Cell 2	Neighbour/aggressor cell
			Cell3	Cell to be measured
ABS transmission	n configuration		Non-MBSFN ABS	As defined in Table A.3.4.1.1-1
CP length	_		Normal	For all cells in the test
DRX				OFF
Time offset between cells		μѕ	Cell 2 offset with respect to Cell 1: 0 Cell 3 offset with respect to	Three synchronous cells
			Cell 1: -2.5	
Physical cell IDs			(PCI _{cell1} - PCI _{cell3})mod6 = 0 (PCI _{cell2} - PCI _{cell3})mod6 != 0 PCI _{cell1} not equal to PCI _{cell3}	Cell PCIs are selected so that all conditions are met
ABS pattern			'100000001000000100000 001000000010000000	FDD ABS Pattern Info IE, as defined in TS 36.423[28], clause 9.2.54. The first/leftmost bit corresponds to the Pcell subframe #0 of the radio frame satisfying SFN mod x = 0, where x is the size of the bit string (40) divided by 10. No MBSFN subframes are configured in the ABS subframes. Configured in Cell 1 and Cell 2.
resource restriction	Time domain measurement resource restriction pattern for neighbour cell measurements on RF Channel 1		'100000001000000100000 001000000010000000	Time domain measurement resource restriction pattern for neighbor cell measurement signalled to the UE in measSubframePatternNeigh IE in measSubframePatternConfigNeigh, as defined in TS 36.331, clause 6.3.5. Configured for Cell 3 measurements. The cell list in measSubframeCellList IE shall contain Cell 3 but not Cell 2.
Time-domain measurement resource restriction pattern for serving cell measurements			'010000000100000010000 000100000001000000	Configured for measurements on Cell 1.
	physCellId		see PCI conditions above	Only the CRS information of cell 2 is
CRS assistance	antennaPortsC ount		1	provided in CRS-AssistanceInfo. It includes a single MBSFN-SubframeConfig element
information	mbsfn- SubframeConfi gList		oneFrame = '000000'	with subframe allocation <i>one</i> Frame='000000'.

Table A.9.2.15.2-2: Cell-specific test parameters for E-UTRAN FDD RSRQ intra frequency test parameters under time domain measurement resource restriction with CRS assistance information and non-MBSFN ABS

				Test 1		Test 2			Test 3		
Pai	rameter	Unit	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3
E-UTRA RF Ch	annel Number			1			1			1	
BW _{channel}		MHz		10			10			10	
Measurement b		n_{PRB}		22—27	•	22—27		22—27		,	
channel defined	nce measurement d in A.3.1.1.1				R.0 FDD		-	R.0 FDD		-	
PDSCH allocat	ion	n_{PRB}	13— 36		-	13— 36		-	13— 36		-
PDCCH/PCFIC Reference mea defined in A.3.1	surement channel		ı	R.6 FDI)	R.6 FDD		ı	R.6 FDI	0	
OCNG Patterns			OP. OP. OP.6		OP.	OP.	OP.6	OP.	OP.	OP.6	
A.3.2.1.5 (OP.5			5	6	FDD	5	6	FDD	5 FDD	6FD D	FDD
A.3.2.1.6 (OP.6 PBCH_RA	(טעט)		FDD	FDD		FDD	FDD		רטט	U	
PBCH_RB											
PSS_RA											
SSS_RA											
PCFICH_RB PHICH_RA											
PHICH_RB		dB	Note		0	Note		0	Note 6		0
PDCCH_RA			6			6		· ·			
PDCCH_RB											
PDSCH_RA PDSCH_RB											
OCNG_RA Note	1										
OCNG_RB Note	1										
	Bands FDD_A								-116		
	Bands FDD_B								-115.5		
a a Nata O	Bands FDD_C Bands FDD_D	dBm/							-115 -114.5		
$N_{oc}^{ m Note~2}$	Bands FDD E.	15	-84.76			-103.85					
	FDD_F Note 7	kHz		· · · · ·				-114			
	Bands FDD_G Note 9						-113				
	Bands FDD_H							-112.5			T
CRS \hat{E}_s/N_{oc}		dB	4	2	-1.5	4	2	-1.5	4	2	-4
CRS (\hat{E}_s/I_{ot})	Note 5 meas	dB	- 1.18	0.32	-6.96	- 1.18	0.32	-6.96	- 0.75	0.54	-9.46
	Bands FDD_A								-112	-114	-120
	Bands FDD_B								111. 5	113. 5	119. 5
	Bands FDD_C								-111	-113	-119
RSRP Note 3,4,5	Bands FDD_D	dBm/	- 90.7	- 92.7	- 06.0	-	-	- 10F	110. 5	112. 5	118. 5
KOKP	Bands FDD_E, FDD_F Note 7	15 kHz	80.7 6	82.7 6	86.2 6	99.8 5	101. 85	105. 35	-110	-112	-118
	Bands FDD_G Note 9								-109	-111	-117
	Bands FDD_H								108. 5	110. 5	116. 5
(RSRQ) _{meas} Note 3,4,5	Bands FDD_A, FDD_B, FDD_C, FDD_D, FDD_E, FDD_F Note 7, FDD_G Note 9, FDD_H	dB	- 14.4 3	- 11.5 9	- 15.0 9	- 14.4 3	- 11.5 9	- 15.0 9	- 14.1 9	- 10.8 1	- 16.8 1
I	1	l	1	<u> </u>		l	l	<u> </u>	1		

	Bands FDD_A						- 80.8 2	-85.03	
	Bands FDD_B	dBm/ 9 MHz						- 80.3 2	-84.54
	Bands FDD_C		- 49.3 4	-53.19	68.4	-72.28	- 79.8 2	-84.04	
(Io) _{meas} Note 3	Bands FDD_D						- 79.3 2	-83.54	
	Bands FDD_E, FDD_F Note 7						- 78.8 2	-83.04	
	Bands FDD_G Note 9						- 77.8 2	-82.04	
	Bands FDD_H						- 77.3 2	-81.54	
Propagation co		-		AWGN		AWGN	•••	AWGN	

- Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. Applies to all subframes.
- Note 3: RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io levels are calculated in CRS symbols of measurement restricted subframes.
- Note 4: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
- Note 5: Applies to restricted measurement subframes for only Cell 2 and Cell 3. For Cell 1, the corresponding value is derived from the normal subframes other than the subframes indicated in the time domain measurement resource restriction pattern for intra-frequency measurements.
- Note 6: Non-ABS and ABS subframe channel powers defined in Table A.3.4.1.1-1.
- Note 7: For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.
- Note 8: E-UTRA operating band groups are as defined in Section 3.5.
- Note 9: Except Band 29 and Band 32.

A.9.2.15.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Clause 9.1.5.3.

A.9.2.16 TDD RSRQ under Time Domain Measurement Resource Restriction with CRS Assistance Information and Non-MBSFN ABS

A.9.2.16.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy under time domain measurement resource restriction with CRS assistance information is within the specified limits. This test will verify the requirements in Clause 9.1.5.3 for TDD intra frequency measurements under time domain measurement resource restriction with CRS assistance information.

A.9.2.16.2 Test parameters

In this test case all cells are on the same carrier frequency. The absolute accuracy of RSRQ intra frequency measurements under time domain measurement resource restriction with CRS assistance information is tested by using the parameters in Table A.9.2.16.2-1 and Table A.9.2.16.2-2 for non-MBSFN ABS with colliding CRS between Cell1 and Cell3 and non-colliding CRS between Cell1 and Cell2. In all test cases, Cell 1 is the serving/aggressor cell, Cell2 is the neighbour/aggressor cell and Cell3 is the target cell to be measured for RSRQ.

The UE is configured by higher layers via Cell1 with a time domain measurement resource restriction pattern for performing E-UTRAN TDD intra-frequency measurements on neighbour cells, namely Cell 3 measurements with a neighbour cell list, where the cell list includes Cell 3. The UE is also provided via higher layers with the CRS assistance information of Cell 2. The information for both measurement pattern and the CRS assistance information shall be provided to the UE before the measurements start.

Note: It's up to eNB's implementation whether the time domain measurement resource restriction pattern for PCell measurements is configured or not.

Table A.9.2.16.2-1: General test parameters for E-UTRAN TDD RSRQ intra frequency test parameters under time-domain measurement resource restriction with CRS assistance information and non-MBSFN ABS

Para	meter	Unit	Value	Comment				
PCell			Cell 1	Serving/aggressor cell				
Neighbour cells			Cell 2	Neighbour/aggressor cell				
			Cell3	Cell to be measured				
Special subfram	e configuration		6	For Cell 1, Cell 2 and Cell 3. For special				
				subframe configurations see Table 4.2-1 in				
				[16].				
Uplink/downlink	subframe		1	For Cell 1, Cell 2 and Cell 2. For uplink-				
configuration	configuration			downlink subframe configurations see Table				
				4.2-2 in [16].				
ABS transmission	on configuration		Non-MBSFN ABS	As defined in Table A.3.4.1.1-1				
CP length			Normal	For all cells in the test				
DRX				OFF				
Time offset betw	veen cells	μs	Cell 2 offset with respect to	Three synchronous cells				
			Cell 1: 0					
			Cell 3 offset with respect to					
			Cell 1: -2.5	0 11 501				
Dhysiaal aall IDa			$(PCI_{cell1} - PCI_{cell3}) \mod 6 = 0$	Cell PCIs are selected so that all conditions				
Physical cell IDs	5		(PCI _{cell2} - PCI _{cell3})mod6 != 0	are met				
			PCI _{cell1} not equal to PCI _{cell3}	TDD ABS Pattern Info IE, as defined in TS				
				36.423 [28], clause 9.2.54.				
				The first/leftmost bit corresponds to the Pcell				
				subframe #0 of the radio frame satisfying				
ABS pattern			'000000001000000001'	SFN mod $x = 0$, where x is the size of the bit				
7 BO pattorn			000000001000000001	string (20) divided by 10. No MBSFN				
				subframes are configured in the ABS				
				subframes.				
				Provided fto the UE for Cell 1 and Cell 2.				
				Time domain measurement resource				
				restriction pattern for neighbor cell				
Time demain me	a a a ura mant			measurement signalled to the UE in				
Time domain me				measSubframePatternNeigh IE in				
resource restrict	neasurements on		'000000001000000001'	measSubframePatternConfigNeigh, as				
RF Channel 1	leasurements on			defined in TS 36.331, clause 6.3.5.				
Kr Channel i				Provided to the UE for Cell 3 measurements.				
				The cell list in measSubframeCellList IE shall				
				contain Cell 3 but not Cell 2.				
				Configured for Cell 1 measurements.				
Time-domain me								
resource restriction pattern for serving cell measurements			'100000000100000000'					
	1							
	physCellId		see PCI conditions above	Only the CRS assistance information of cell 2				
CRS	antennaPortsC ount		is provided for Cell 2 only in CRS-					
assistance	mbsfn-			AssistanceInfo. It includes a single MBSFN-				
information	SubframeConfi		oneFrame = '000000'	SubframeConfig element with subframe allocation one Frame='000000'.				
	gList			anocation one manie- 000000.				
<u> </u>	1 3			1				

Table A.9.2.16.2-2: Cell-specific test parameters for E-UTRAN TDD RSRQ intra frequency test parameters under time domain measurement resource restriction with CRS assistance information and non-MBSFN ABS

				Test 1			Test 2			Test 3		
Pai	rameter	Unit	Cell 1	Cell 2	Cell 3	Cell 1	Cell 2	Cell 3	Cell 1	Cell	Cell 3	
E-UTRA RF Ch	E-UTRA RF Channel Number		1	1	3	•	1 2 3		1 2 3		<u> </u>	
BW _{channel}		MHz		10			10			10		
Measurement b	oandwidth	n_{PRB}		22—27	•	22—27		22—27				
PDSCH Refere	nce measurement d in A.3.1.1.2		R.0 TDD		-	R.0 TDD	-		R.0 TDD	-		
PDSCH allocat	ion	n_{PRB}	13— 36		-	13— 36		-	13— 36		-	
PDCCH/PCFIC Reference mea defined in A.3.1	surement channel			R.6 TDI)		R.6 TDI)	R.6 TDD)	
OCNG Patterns A.3.2.2.1 (OP.1 A.3.2.2.2 (OP.2	TDD) and		OP. 1 TDD	OP. 2 TDD	OP.2 TDD	OP. 1 TDD	OP. 2 TDD	OP.2 TDD	OP. 1 TDD	OP. 2 TDD	OP.2 TDD	
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RA OCNG_RA POCNG_RB POCNG_RB		dB	Note 6		0	Note 6		0	Note 6		0	
$N_{oc}^{ m Note2}$	Bands TDD_A Bands TDD_C			-84.76		-103.85		-116 -115				
CRS \hat{E}_s/N_{oc}	Bands TDD_E	kHz dB	4	2	-1.5	4	2	-1.5	4	-114 2	-4	
$\frac{\sum_{s} I_{oc}}{\text{CRS}\left(\hat{E}_{s}/I_{ot}\right)}$		dB	1.18	- 0.32	-6.96	1.18	- 0.32	-6.96	- 0.75	0.54	-9.46	
RSRP ^{Note3,4,5}	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/ 15 kHz	- 80.7 6	- 82.7 6	- 86.2 6	- 99.8 5	- 101. 85	- 105. 35	-112 -111 -110	-114 -113 -112	-120 -119 -118	
(RSRQ) _{meas} Note3,4,5	Bands TDD_A, TDD_C, TDD_E	dB	- 14.4 3	- 11.5 9	- 15.0 9	- 14.4 3	- 11.5 9	- 15.0 9	- 14.1 9	- 10.8 1	- 16.8 1	
	Bands TDD_A		- 49.3 -53		-53.19		- 3.4 -72.28 3		- 80.8 2	-85	5.03	
$(Io)_{meas}^{Note3}$	Bands TDD_C	dBm/ 9 MHz							- 79.8 2	-84.03		
	Bands TDD_E								- 78.8 2	-83	3.04	
Propagation condition		-		AWGN			AWGN			AWGN		

Note 1:	OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
Note 2:	Interference from other cells and noise sources not specified in the test is assumed to be constant
	over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be
	fulfilled. Applies to all subframes.
Note 3:	RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io levels are calculated in CRS symbols of measurement restricted subframes.
Note 4:	RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
Note 5:	Applies to restricted measurement subframes for only Cell 2 and Cell 3. For Cell 1, the corresponding value is derived from the normal subframes other than the subframes indicated in the time domain measurement resource restriction pattern for intra-frequency measurements.
Note 6:	Non-ABS and ABS subframe channel powers defined in Table A.3.4.1.1-1.
Note 7:	E-UTRA operating band groups are as defined in Section 3.5.

A.9.2.16.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Clause 9.1.5.3.

A.9.2.17 FDD Intra frequency case for 5 MHz bandwidth

A.9.2.17.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Clause 9.1.5.1.

A.9.2.17.2 Test parameters

In this test case all cells are on the same carrier frequency. The absolute accuracy of RSRQ intra frequency measurement is tested by using the parameters in Table A.9.2.17.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell.

Table A.9.2.17.2-1: RSRQ FDD Intra frequency test parameters, 5MHz

Barrantan		l limit	Tes	st 1	Tes	Test 2		Test 3	
	ameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2	
E-UTRA RF Channel	Number			1		1		1	
BW _{channel}		MHz	;	5		5		5	
Measurement bandw		n_{PRB}		– 15	10—15		10—15		
PDSCH Reference m defined in A.3.1.1.1	neasurement channel		R.5 FDD	-	R.5 FDD	-	R.5 FDD	-	
PDSCH allocation		n_{PRB}	7—17	-	7—17	-	7—17	-	
PDCCH/PCFICH/PHI			R.11	FDD	R.11	FDD	R.11	FDD	
OCNG Patterns defin (OP.15 FDD) and A.3 PBCH_RA			OP.15 FDD	OP.16 FDD	OP.15 FDD	OP.16 FDD	OP.15 FDD	OP.16 FDD	
PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RA OCNG_RB Note1		dB	0	0	0	0	0	0	
$N_{oc}^{$	Bands FDD_N	dBm/15 kHz	-81	.76	-100	0.85	-10	9.5	
\hat{E}_{s}/I_{ot}		dB	-1.76	-1.76	-4.70	-4.70	-5.46	-5.46	
RSRP ^{Note3}	Bands FDD_N	dBm/15 kHz	-78.76	-78.76	-103.75	-103.75	-113.50	-113.50	
RSRQ ^{Note3}	Bands FDD_N	dB	-14.77	-14.77	-16.76	-16.76	-17.34	-17.34	
Io ^{Note3}	Bands FDD_N	dBm/4.5 MHz	-50).01	-73	.01	-82	.19	
\hat{E}_s/N_{oc}		dB	3	3	-2.9	-2.9	-4	-4	
Propagation condition		-		'GN	AW		AW		
Note 1: OCNG sha	Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral					ectral			

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 4: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.9.2.17.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Clause 9.1.5.1.

A.9.2.18 FDD—FDD Inter frequency case for 5MHz bandwidth

A.9.2.18.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Sections 9.1.6.1 and 9.1.6.2.

A.9.2.18.2 Test parameters

In this test case the two cells are on different carrier frequencies and measurement gaps are provided. Both RSRQ inter frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.2.18.2-1. In all tests, Cell 1 is the PCell and Cell 2 the target cell.

Table A.9.2.18.2-1: RSRQ FDD—FDD Inter frequency test parameters, 5MHz

D		l lmit	Tes	st 1	Tes	st 2	Tes	t 3
Pa	arameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF C	hannel Number		1	2	1	2	1	2
BW _{channel}		MHz	5	5	5	5	5	5
Gap Pattern Id	<u> </u>		0	-	0	-	0	-
Measurement		n_{PRB}	_	–15 T		–15	10—	-15
channel define	ence measurement ed in A.3.1.1.1		R.5 FDD	-	R.5 FDD	-	R.6 FDD	-
PDSCH alloca	ation	n_{PRB}	7—17	-	7—17	-	7—17	-
PDCCH/PCFI Reference me defined in A.3	asurement channel		R.11	FDD	R.11	FDD	R.11 I	-DD
A.3.2.1.16 (OF	P.15 FDD) and		OP.15 FDD	OP.16 FDD	OP.15 FDD	OP.16 FDD	OP.15 FDD	OP.16 FDD
PBCH_RA PBCH_RB								
PSS_RA SSS_RA								
PCFICH_RB								
PHICH_RA]						
PHICH_RB		dB	0	0	0	0	0	0
PDCCH_RA		-						
PDCCH_RB		-						
PDSCH_RA PDSCH_RB		-						
OCNG_RA ^{Note}	e1	+						
OCNG_RB ^{Note}	21	-						
OCNO_ND	Bands FDD_A						-119.5	N/A
	Bands FDD_B						-119	N/A
	Bands FDD_C					-118.5	N/A	
$N_{oc}^{ m Note2}$	Bands FDD_D						-118	N/A
TV oc	Bands FDD_E, FDD_F Note 5	dBm/15 kHz	-77	-77	-101.70	-101.70	-117.5	N/A
	Bands FDD_G	1					-116.5	N/A
	Bands FDD_H						-116	N/A
	Bands FDD_N						- N/A	-113
$\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$		dB	-1.75	-1.75	-4.00	-4.00	-4.00	-4.00
	Bands FDD_A						-123.5	N/A
	Bands FDD_B						-123	N/A
	Bands FDD_C						-122.5	N/A
Neveo	Bands FDD_D						-122	N/A
RSRP ^{Note3}	Bands FDD_E, FDD_F Note 5	dBm/15 kHz	-78.75	-78.75	-105.70	-105.70	-121.5	N/A
	Bands FDD_G						-120.5	N/A
	Bands FDD_H	-					-120 N/A	N/A
	Bands FDD_N						N/A	-117
	Bands FDD_A	1						
	Bands FDD_B Bands FDD_C	1						
	Bands FDD_C Bands FDD D	1						
RSRQ ^{Note3}	Bands FDD F	dB	-14.76	-14.76	-16.25	-16.25	-16.25	-16.25
	FDD_F Note 5						. 0.20	
	Bands FDD_G	-						
	Bands FDD_H	-						
-	Bands FDD_N Bands FDD_A						-93.27	N/A
	Bands FDD_B	1					-93.27 -92.77	N/A N/A
Note 2	Bands FDD_C	dBm/4.5					-92.77 -92.27	N/A N/A
Io ^{Note3}	Bands FDD_C Bands FDD_D	MHz	-50.01	-50.01	-75.47	-75.47	-92.27 -91.77	N/A N/A
	Bands FDD F.	1						
	FDD_F Note 5						-91.27	N/A

	Bands FDD_G						-90.27	N/A
	Bands FDD_H						-89.77	N/A
	Bands FDD_N						N/A	-86.77
\hat{E}_s/N_{oc}		dB	-1.75	-1.75	-4.0	-4.0	-4.0	-4.0
Propagation	on condition	ı	AW	'GN	AW	'GN	AWO	3N
Note 1:	OCNG shall be used such	n that both cell	s are fully	allocated a	nd a consta	ant total tra	nsmitted pov	wer
	spectral density is achieve	ed for all OFD	M symbols					
Note 2:	Interference from other co	ells and noise	sources no	t specified	in the test	is assumed	d to be const	ant over
						N		
	subcarriers and time and	shall be mode	lled as AW	GN of app	ropriate po	wer for 🔭	$^{\circ c}$ to be fulfill	ed.
Note 3:	RSRQ, RSRP and lo leve	els have been	derived fro	m other pa	rameters fo	or informati	on purposes	. They
	are not settable paramete							
Note 4:	RSRP and RSRQ minimu	ım requiremen	its are spec	cified assur	ning indep	endent inte	erference and	l noise at
	each receiver antenna po	rt.						
Note 5: For Band 26, the tests shall be performed with the assigned E-UTRA channel bandwidth within 8				865-894				
	MHz.							
Note 6:	This test is only applicable	e for testing in	ter-frequen	cy requirer	nents for B	ands FDD	_N. Cell 2 is	on the
	Band under test, and Cell	1 is on anoth	er band su	oported by	the UE.			

A.9.2.18.3 Test Requirements

Note 7:

The RSRQ measurement accuracy shall fulfil the requirements in Sections 9.1.6.1 and 9.1.6.2.

E-UTRA operating band groups are as defined in Section 3.5.

A.9.2.19 FDD-FDD Inter Frequency WB-RSRQ

A.9.2.19.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits when the measurement configuration message received by the UE contains *widebandRSRQ-Meas* parameter in TS 36.331 [2]. In the test the UE shall also be configured with the *AllowedMeasBandwidth* parameter defined in TS 36.331 [2]. The test shall verify the WB-RSRQ inter frequency absolute accuracy requirements defined in Section 9.1.6.3.

A.9.2.19.2 Test parameters

In this test case the two cells are on two different carrier frequencies and measurement gaps are provided. The WB-RSRQ inter frequency absolute accuracy requirement is tested by using test parameters in Table A.9.2.19.2-1. In the test, Cell 1 is the PCell and Cell 2 the target cell on which the UE shall be ordered to measure WB-RSRQ.

Table A.9.2.19.2-1: WB-RSRQ FDD-FDD Inter frequency test parameters

Por	ameter	Unit	Te	est 1	
		Unit	Cell 1	Cel	l 2
E-UTRA RF Chan	nel Number		1	2	
BW _{channel}		MHz	10	10	
Antenna Configur	ation		1x2	1x	:2
Gap Pattern Id			0	-	
PBCH_RA		1		C	
PBCH_RB				C	
PSS_RA SSS_RA		-		C	
PCFICH_RB		1		0	
PHICH_RA				_0	
PHICH_RB		dB	0	_ c	
PDCCH_RA		ub		_0	
PDCCH_RB				_0	0
PDSCH_RA		1		_0	0
PDSCH_RB				_0	0
OCNG_RA ^{Note1}					•
OCNG_RB ^{Note1}				_0	•
AllowedMeasBan	dwidth in TS 36.331	RB	6	5	0
PDSCH Referenc			R.0 FDD	-	
PDSCH allocation		n_{PRB}	13-36	-	
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.1			R.6 FDD	-	
OCNG Patterns d (OP.1 FDD)	efined in A.3.2.1.1		OP.1 FDD	-	
$I_{ot}^{ m Note2}$	bandwidth	n_{PRB}	0-49	0-21 28-49	22-27
1 ot		dBm/15 kHz	-94	-87	-110
\hat{E}_{s}/I_{ot}	bandwidth	n_{PRB}	0-49	0-21 28-49	22-27
		dB	-4	-3	20
RSRP ^{Note3}		dBm/15 kHz	-98	-9	0
RSRQ ^{Note3}		dB	-16.25		
WB-RSRQ ₀ ^{Note3} ir		dB	-	-13	.68
WB-RSRQ ₁ ^{Note3} in	subframe ≠ 0	dB	-	-13	.63
lo ^{Note3}		dBm/ 9 MHz	-64.76	-	
Io ^{Note3} in symbol 0, 4, 11 of subframe 0		dBm/ 9 MHz	-	-82.38	
lo ^{Note3} in symbol 7		dBm/ 9 MHz	-	-82	.20
Io ^{Note3} in symbol 0 subframes ≠ 0	, 4, 7, 11 of	dBm/ 9 MHz	-	-82	.38
Propagation cond		-	AWGN	AW	
Note 1: OCNG shall be used such that Cell 1 is fully allocated and a constant total					

Note 1: OCNG shall be used such that Cell 1 is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells not specified in the test, assumed to be constant over time and modelled as noise.

Note 3: RSRQ, RSRP, WB-RSRQ and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. The stated values represent the weighted average over the allowed measurement bandwidth, and the WB-RSRQ values assume averaging over symbols 0, 4, 7 and 11 of the subframe.

Note 4: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

Note 5: This test case is applicable to all FDD frequency bands except band 31.

A.9.2.19.3 Test Requirements

The WB-RSRQ measurement accuracy for cell 2 shall fulfil the requirements in Section 9.1.6.3, compared with WB-RSRQ₀ or WB-RSRQ₁.

A.9.2.20 TDD—TDD Inter Frequency WB-RSRQ

A.9.2.20.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits when the measurement configuration message received by the UE contains *widebandRSRQ-Meas* parameter in TS 36.331 [2]. In the test the UE shall also be configured with the *AllowedMeasBandwidth* parameter defined in TS 36.331 [2]. The test shall verify the WB-RSRQ inter frequency absolute accuracy requirements defined in Section 9.1.6.3.

A.9.2.20.2 Test parameters

In this test case the two cells are on two different carrier frequencies and measurement gaps are provided. The WB-RSRQ inter frequency absolute accuracy requirement is tested by using test parameters in Table A.9.2.20.2-1. In the test, Cell 1 is the PCell and Cell 2 the target cell on which the UE shall be ordered to measure WB-RSRQ.

Table A.9.2.20.2-1: WB-RSRQ TDD-TDD Inter frequency test parameters

Test 1					
Para	meter	Unit	Cell 1	Cel	1 2
E-UTRA RF Chann	el Number		1	2	
BW _{channel}		MHz	10	1	0
Special subframe c	onfiguration Note1		6	6	;
Uplink-downlink cor	nfiguration Note1		1	1	
Antenna Configurat	tion		1x2	1x	2
Gap Pattern Id			0	-	
PBCH_RA				C	
PBCH_RB				C	
PSS_RA				C	
SSS_RA				C	
PCFICH_RB				0	
PHICH_RA		-ID		_0	
PHICH_RB PDCCH_RA		dB	0	0	
PDCCH_RA		-			
PDSCH_RA					
PDSCH_RB				_ c	
OCNG_RA ^{Note2}				_0	
OCNG RB ^{Note2}					
AllowedMeasBand	width in TS 36 331				
[2]	Matrin 10 00.001	RB	6	5	0
PDSCH Reference	measurement		D o TDD		
channel defined in			R.0 TDD	-	
PDSCH allocation		n_{PRB}	13-36	-	
PDCCH/PCFICH/P measurement chan			R.6 TDD	-	
A.3.1.2.2 OCNG Patterns def (OP.1 TDD)	fined in A.3.2.2.1		OP.1 TDD	-	
I_{ot}^{Note3}	bandwidth	n_{PRB}	0-49	0-21 28-49 22-27	
OI .		dBm/15 kHz	-94	-87	-110
\hat{E}_{s}/I_{ot}	bandwidth	n_{PRB}	0—49	0-21 28-49	22-27
		dB	-4	-3	20
RSRP ^{Note4}		dBm/15 kHz	-98	-9	0
RSRQ ^{Note4}		dB	-16.25	-	
WB-RSRQ ₀ ^{Note4} in s		dB	-	-13	.68
WB-RSRQ ₁ ^{Note4} in subframe ≠ 0		dB	-	-13	.63
lo ^{Note4}		dBm/ 9 MHz	-64.76	-	
lo ^{Note4} in symbol 0, 4, 11 of subframe 0		dBm/ 9 MHz	-	-82	.38
Io ^{Note4} in symbol 7 of subframe 0		dBm/ 9 MHz	-	-82	.20
Io ^{Note4} in symbol 0, subframes ≠ 0		dBm/ 9 MHz	-	-82	
Propagation conditi	on	-	AWGN	AW	
Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and					

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 4: RSRQ, RSRP, WB-RSRQ and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. The stated values represent the weighted average over the allowed measurement bandwidth, and the WB-RSRQ values assume averaging over symbols 0, 4, 7 and 11 of the subframe.

Note 2: OCNG shall be used such that Cell 1 is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells not specified in the test, assumed to be constant over time and modelled as noise.

Note 5: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

A.9.2.20.3 Test Requirements

The WB-RSRQ measurement accuracy for cell 2 shall fulfil the requirements in Section 9.1.6.3, compared with WB-RSRQ₀ or WB-RSRQ₁.

A.9.2.21 FDD RSRQ for E-UTRAN Carrier Aggregation for 10MHz+5MHz

The test case in this section are applicable to carrier aggregation capable UEs which have been configured with a downlink SCell.

A.9.2.21.1 Test Purpose and Environment

The purpose of this test is the same as defined in Subclause A.9.2.5.1.

A.9.2.21.2 Test parameters

The parameters of this test are the same as defined in Subclause A.9.2.5.2 except that the values of the parameters in the Table A.9.2.21.2-1 will replace the values of the corresponding parameters in A.9.2.5.2-1.

Table A.9.2.21.2-1: FDD RSRQ Carrier Aggregation test parameters

		ı			
Par	ameters	Units	Tes	t 1 Cell 2	Cell 3
BW _{channel_0}	Note 1	MHz	10	Cell 2	
	nent bandwidth	n_{PRB}	22-27		-15
	nent channel		R.0 FDD	R.5 FDD	-
defined in A.3.1.1.1 PDSCH allocation		n_{PRB}	13-36	7-17	-
Reference channel de A.3.1.2.1			R.6 FDD	R.11	FDD
in A.3.2.1. A.3.2.1.15 and	tterns defined 1 (OP.1 FDD), 5 (OP.15 FDD)		OP.1 FDD	OP.15 FDD	OP.16 FDD
	Bands FDD A		-119.5	-116	-116
	Bands FDD_B		-119	-115.5	-115.5
	Bands FDD_C		-118.5	-115	-115
	Bands FDD_D		-118	-114.5	-114.5
$N_{oc}^{$	Bands FDD_E, FDD_F	dBm/15 kHz	-117.5	-114	-114
	Bands FDD_G		-116.5	-113	-113
	Bands FDD_H		-116	-112.5	-112.5
	Bands FDD_N		N/A	-109.5	-109.5
	Bands FDD_A		-123.5	-120	-120
	Bands FDD_B		-123	-119.5	-119.5
	Bands FDD C		-122.5	-119	-119
	Bands FDD_D		-122	-118.5	-118.5
RSRP ^{Note2}	Bands FDD_E, FDD_F	dBm/15 kHz	-121.5	-118	-118
	Bands FDD_G		-120.5	-117	-117
	Bands FDD_H		-120	-116.5	-116.5
	Bands FDD_N		N/A	-113.5	-113.5
	Bands FDD_A				
RSRQ ^{Note2}	Bands FDD_B Bands FDD_C Bands FDD_D Bands FDD_E, FDD_F Bands FDD_G	dB	-16.25	-17.34	-17.34

	Bands FDD_H				
	Bands FDD_N				
	Bands FDD_A		-90.26		
	Bands FDD_B		-89.76		
	Bands FDD_C		-89.26		
	Bands FDD_D	dBm/9MHz	-88.76	N,	/A
	Bands FDD_E, FDD_F		-88.26		
	Bands FDD_G		-87.26		
	Bands FDD_H		-86.76		
Io ^{Note2}	Bands FDD_A			-88	.67
	Bands FDD_B			-88	.17
	Bands FDD_C			-87	.67
	Bands FDD_D			-87	.17
	Bands FDD_E, FDD_F	dBm/4.5MHz	N/A	-86	.67
	Bands FDD_G			-85	.67
	Bands FDD_H			-85	.17
	Bands FDD_N			-82	.17
Note 1:	This test verifies channel bandwic	th and is perfor			
Note 2:	defined in section RSRQ, RSRP are parameters for in	nd lo levels have nformation purpo			
Note 3:	parameters themselves. See Table A.9.2.5.2-1 for the other parameters				

A.9.2.21.3 Test Requirements

The test requirements defined in section A.9.2.5.3 shall apply in this test case.

A.9.2.22 TDD RSRQ for E-UTRAN Carrier Aggregation for 10MHz+5MHz

The test case in this section are applicable to carrier aggregation capable UEs which have been configured with a downlink SCell.

A.9.2.22.1 Test Purpose and Environment

The purpose of this test is the same as defined in Subclause A.9.2.6.1.

A.9.2.22.2 Test parameters

The parameters of this test are the same as defined in Subclause A.9.2.6.2 except that the values of the parameters in the Table A.9.2.22.2-1 will replace the values of the corresponding parameters in A.9.2.6.2-1.

Table A.9.2.22.2-1: TDD RSRQ Carrier Aggregation test parameters

_			Test 1		
Parameters Note1		Units	Cell 1	Cell 2	Cell 3
BW _{channel}	Note1 _CA	MHz	10	5	
Measure	ment bandwidth	n_{PRB}	22-27	10-	15
measure	PDSCH Reference measurement channel defined in A.3.1.1.2		R.0 TDD	R.4TDD	-
PDSCH a	allocation	$n_{{\scriptscriptstyle PRB}}$	13-36	7-17	-
Reference	PCFICH/PHICH re measurement defined in		R.6 TDD	R.1 TD	-
A.3.2.2.1 A.3.2.2.9	OCNG Patterns defined in A.3.2.2.1 (OP.1 TDD), A.3.2.2.9 (OP.9 TDD) and A.3.2.2.10 (OP.10 TDD)		OP.1 TDD	OP.9 TDD	OP.10 TDD
lo ^{Note2}	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/9MHz	-90.26 -89.26 -88.26	N/A	A
10	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/4.5MHz	N/A	-88. -87. -86.	67
Note 1:	This test verifies to of channel bandw	idth and is perfo	rmed acc		
Note 2:	principle defined in section A.3.6.1.				
Note 3:	See Table A.9.2.6	6.2-1 for the other	er parame	ters	

A.9.2.22.3 Test Requirements

The test requirements defined in section A.9.2.6.3 shall apply in this test case.

A.9.2.23 FDD RSRQ for E-UTRA Carrier Aggregation (5MHz + 5MHz bandwidth)

The test case in this section are applicable to carrier aggregation capable UEs which have been configured with a downlink SCell.

A.9.2.23.1 Test Purpose and Environment

The purpose of this test is the same as defined in Subclause A.9.2.5.1.

A.9.2.23.2 Test parameters

The parameters of this test are the same as defined in Subclause A.9.2.5.2 except that the values of the parameters in the Table A.9.2.23.2-1 will replace the values of the corresponding parameters in A.9.2.5.2-1.

Table A.9.2.23.2-1: FDD RSRQ Carrier Aggregation test parameters

Parar	meters		Test	1	
		Units	Cell 1	Cell 2	Cell 3
BW _{channel_CA} Note		MHz	5	5	5
Measurement ba		n_{PRB}	10-15	10-15	10-15
PDSCH Referen channel defined	ce measurement in A.3.1.1.1		R.5 FDD	R.5 FDD	N/A
PDSCH allocation	on	n_{PRB}	7-17	7-17	-
PDCCH/PCFICH	I/PHICH		R.11	R.11	
Reference meas defined in A.3.1	urement channel .2.1		FDD	FDD	R.11 FDD
OCNG Patterns A.3.2.1.15 (OP.1 A.3.2.1.16 (OP.1	5 FDD) and		OP.15 FDD	OP.15 FDD	OP.16FDD
,	Bands FDD_A		-119.5	-116	-116
	Bands FDD_B		-119	-115.5	-115.5
	Bands FDD_C		-118.5	-115	-115
	Bands FDD_D		-118	-114.5	-114.5
$N_{oc}^{ m Note2}$	Bands FDD_E, FDD_F	dBm/15 kHz	-117.5	-114	-114
	Bands FDD_G		-116.5	-113	-113
	Bands FDD_H		-116	-112.5	-112.5
	Bands FDD_N		-113	-109.5	-109.5
	Bands FDD_A		-123.5	-120	-120
	Bands FDD B		-123	-119.5	-119.5
	Bands FDD_C	dBm/15 kHz	-122.5	-119	-119
	Bands FDD_D		-122	-118.5	-118.5
RSRP ^{Note2}	Bands FDD_E, FDD_F		-121.5	-118	-118
	Bands FDD_G		-120.5	-117	-117
	Bands FDD_H		-120	-116.5	-116.5
	Bands FDD_N	1	-117	-113.5	-113.5
	Bands FDD_A			110.0	110.0
	Bands FDD_B	-			
	Bands FDD_C	-			
	Bands FDD_D				
	Bands	-			
RSRQ ^{Note2}	FDD_E,	dB	-16.25	-17.34	-17.34
	Bands FDD_G				
	Bands FDD_H	-			
	Bands FDD_N				
	Bands FDD_A		-93.26		88.67
	Bands FDD_B Note 5		-92.76		88.17
	Bands FDD_C		-92.26		87.67
lo ^{Note2}	Bands FDD_D	1	-91.76		Q7 17
	Bands FDD_E, FDD_F Note 5	dBm/4.5MHz	-91.76	-87.17 -86.67	
	Bands FDD_G Note 5		-90.26	-:	85.67
	Bands FDD_H		-89.76		85.17
	Bands FDD_N		-86.76		82.76
Note 1: This t	act varifies the PPI	M roquiromont u	امدن دن دادندا،	on on dont	a4 ala a a a a l

Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section

Note 2: RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 3: See Table A.9.2.5.2-1 for the other parameters

Note 4: E-UTRA operating band groups are as defined in Section 3.5.

Note 5: The test applies for E-UTRA operating bands in this band group which are supporting 5MHz + 5MHz channel bandwidth.

A.9.2.23.3 Test Requirements

The test requirements defined in section A.9.2.5.3 shall apply in this test case.

A.9.2.24 TDD RSRQ for E-UTRA Carrier Aggregation (5MHz + 5MHz bandwidth)

The test case in this section are applicable to carrier aggregation capable UEs which have been configured with a downlink SCell.

A.9.2.24.1 Test Purpose and Environment

The purpose of this test is the same as defined in Subclause A.9.2.6.1.

A.9.2.24.2 Test parameters

The parameters of this test are the same as defined in Subclause A.9.2.6.2 except that the values of the parameters in the Table A.9.2.24.2-1 will replace the values of the corresponding parameters in A.9.2.6.2-1.

Table A.9.2.24.2-1: TDD RSRQ Carrier Aggregation test parameters

Parameters Note1			Test 1		
		Units	Cell 1	Cell 2	Cell 3
BW _{channel}	CA Note1	MHz	10	5	5
Measurement bandwidth		$n_{\it PRB}$	10-15	10-15	10-15
PDSCH Reference measurement channel defined in A.3.1.1.1			R.4 TDD	R.4 TDD	N/A
PDSCH a	llocation	n_{PRB}	7-17	7-17	N/A
	PCFICH/PHICH e measurement lefined in		R.11 TDD	R.11 TDD	R.11 TDD
in A.3.2.2	OCNG Patterns defined in A.3.2.2.9 (OP.9 TDD) and A.3.2.2.10 (OP.10 TDD)		OP.9 TDD	OP.9 TDD	OP.10 TDD
	Bands TDD_A Note 5		-93.26	-88	.67
lo ^{Note2}	Bands TDD_C Note 5	dBm4.5MHz	-92.26	-87.67	
	Bands TDD_E Note 5		-91.26	-86	.67
Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1. Note 2: Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Note 3: See Table A.9.2.6.2-1 for the other parameters					
Note 5: Note 4: Note 5:	E-UTRA operations of the test applies group which are bandwidth.	ng band groups for E-UTRA ope	are as defi erating ban	ned in Sec ds in this b	

A.9.2.24.3 Test Requirements

The test requirements defined in section A.9.2.6.3 shall apply in this test case.

A.9.2.25 RSRQ for E-UTRAN TDD-FDD Carrier Aggregation with PCell in FDD

The test case in this section are applicable to TDD-FDD carrier aggregation capable UEs which have been configured with a downlink SCell.

A.9.2.25.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ for E-UTRAN TDD-FDD Carrier Aggregation with PCell in FDD measurement accuracy in carrier aggregation is within the specified limits under AWGN propagation conditions. This test will verify the absolute accuracy of RSRQ measurements for the primary component carrier defined in clause 9.1.11.1, the absolute accuracy of RSRQ measurements for the secondary component carrier defined in clause 9.1.11.2, and also the relative RSRQ accuracy requirement between primary and secondary component carriers defined in clause 9.1.11.3.

A.9.2.25.2 Test parameters

In this test case the PCell is FDD and SCell is TDD. Both RSRQ absolute and relative accuracy requirements of the primary and secondary component carrier are tested by using test parameters specified in Table A.9.2.25.2-1. In the test, Cell 1 is the PCell, Cell 2 is the SCell on the Secondary Component Carrier (SCC). The SCC is configured and activated.

The parameters of this test are given in Table A.9.2.25.2-1.

Table A.9.2.25.2-1: RSRQ for E-UTRAN TDD-FDD Carrier Aggregation with PCell in FDD test parameters

Р	arameter	Unit	Cell 1	Cell 2
E-UTRA RF	Channel Number		1	2
BW _{channel}			5MHz: $N_{RB,c} = 25$ 10MHz: $N_{RB,c} = 50$ 20MHz: $N_{RB,c} = 100$	5MHz: N _{RB,c} = 25 10MHz: N _{RB,c} = 50 20MHz: N _{RB,c} = 100
Special subt	frame n ^{Note1}		-	6
Uplink-down configuration	nlink		-	1
	nt bandwidth	$n_{{\scriptscriptstyle PRB}}$	5MHz: 10-15 10MHz: 22-27 20MHz: 47-52	5MHz: 10-15 10MHz: 22-27 20MHz: 47-52
PDSCH Ref measureme in A.3.1.1	erence nt channel defined		5MHz: R.5 FDD 10MHz: R.0 FDD 20MHz: R.4 FDD	5MHz: R.4 TDD 10MHz: R.0 TDD 20MHz: R.3 TDD
PDSCH allo		$n_{_{PRB}}$	5MHz: 7-17 10MHz: 13-36 20MHz: 38-61	5MHz: 7-17 10MHz: 13-36 20MHz: 38-61
Reference n	FICH/PHICH neasurement ined in A.3.1.2		5MHz: R.11 FDD 10MHz: R.6 FDD 20MHz: R.10 FDD	5MHz: R.11 TDD 10MHz: R.6 TDD 20MHz: R.10 TDD
A.3.2	erns defined in		5MHz: OP.15 FDD 10MHz: OP.1 FDD 20MHz: OP.11 FDD	5MHz: OP.9 TDD 10MHz: OP.1 TDD 20MHz: OP.7 TDD
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RE PHICH_RA PHICH_RB	1	dB	0	0
PDCCH_RE PDSCH_RE PDSCH_RE OCNG_RA ^N OCNG_RB ^N	N B Iote2			
	Bands TDD_A		-	-116
	Bands TDD_C		-	-115
	Bands TDD_E		-	-114
	Bands FDD_A		-119.5	-
Natao	Bands FDD_B		-119	-
$N_{oc}^{ m Note3}$	Bands FDD_C	dBm/15 kHz	-118.5	-
	Bands FDD_D Bands FDD_E, Bands FDD_F Note 6		-118 -117.5	-
	Bands FDD_G		-116.5	-
<u> </u>	Bands FDD_H		-116	-
\hat{E}_s/N_{oc}		dB	-6.0	-6.0
\hat{E}_{s}/I_{ot}	T	dB	-6.0	-6.0
	Bands TDD_A		-	-122
	Bands TDD_C		-	-121
Note 4	Bands TDD_E		-	-120
RSRP ^{Note4}	Bands FDD_A	dBm/15 kHz	-125.5	-
	Bands FDD_B		-123	-
	Bands FDD_C		-124.5	-
	Bands FDD_D		-124	-

	Bands FDD_E, Bands FDD_F Note		-123.5	-
	Bands FDD_G		-122.5	-
	Bands FDD_H		-122	-
	Bands TDD_A			
	Bands TDD_C		-	-17.77
	Bands TDD_E			
	Bands FDD_A			
	Bands FDD_B			
RSRQ ^{Note4}	Bands FDD_C	dB		
	Bands FDD_D		47.77	
	Bands FDD_E,		-17.77	-
	Bands FDD_F Note			
	Bands FDD_G			
	Bands FDD_H			
	Bands TDD_A		-	-87.25 +
				10log(N _{RB,o} /50)
	Bands TDD_C		-	-86.25 +
		-	-	10log(N _{RB,c} /50)
	Bands TDD_E			-85.25 +
			-90.75 +	10log(N _{RB,c} /50)
	Bands FDD_A		-90.75 ∓ 10log(N _{RB,} √50)	-
	Bands FDD B		89.76	-
lo ^{Note4}		alDirec/DVA/	-89.75 +	
10	Bands FDD_C	dBm/BW _{channel}	10log(N _{RB,} /50)	-
	D 1 500 0		-89.25 +	
	Bands FDD_D		10log(N _{RB,c} /50)	•
	Bands FDD_E,		-88.75 +	
	Bands FDD_F Note		10log(N _{RB,} √50)	-
	0			
	Bands FDD G		-87.75 +	-
		-	10log(N _{RB,} /50)	
	Bands FDD_H		-87.25 + 10log(N _{RB.⊄} /50)	-
Propagation Condition			AWGN	AWGN
Antenna Configuration			1x2	1x2
Timing offset to Cell 1		μs		0
Time alignm	ent error relative to	•	-	≤ TAE
Note 1: For energial subframe and uplink downlink configurations see Tables 4.2.1 and 4.2.2 in				

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate

power for N_{oc} to be fulfilled.

Note 4: Es/lot, RSRP, RSRQ and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

Note 6: For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.

Note 7: The selection of the bands for testing depends on the configuration of the carrier aggregation supported by the UEs.

Note 8: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Note 9: E-UTRA operating band groups are as defined in Section 3.5.

Note 10: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

A.9.2.25.3 Test Requirements

In the test, the RSRQ measurement accuracy in carrier aggregation shall fulfil the requirements in clause 9.1.11.1, 9.1.11.2, and 9.1.11.3.

- The absolute accuracy of intra-frequency RSRQ measurements of Cell 1 on the primary component carrier shall fulfil the requirements specified in clause 9.1.11.1.
- The absolute accuracy of intra-frequency RSRQ measurements of Cell 2 on the secondary component carrier shall fulfil the requirements specified in clause 9.1.11.2.
- The relative accuracy of inter-frequency RSRQ measurements between the primary and secondary component carriers for Cell 2 relative to Cell 1 shall fulfil the requirements specified in clause 9.1.11.3.

A.9.2.26 RSRQ for E-UTRAN TDD-FDD Carrier Aggregation with PCell in TDD

The test case in this section are applicable to TDD-FDD carrier aggregation capable UEs which have been configured with a downlink SCell.

A.9.2.26.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ for E-UTRAN TDD-FDD Carrier Aggregation with PCell in TDD measurement accuracy in carrier aggregation is within the specified limits. This test will verify the absolute accuracy of RSRQ measurements for the primary component carrier defined in Clause 9.1.11.1, the absolute accuracy of RSRQ measurements for the secondary component carrier defined in Clause 9.1.11.2, and also the relative RSRQ accuracy requirement between primary and secondary component carriers defined in Clause 9.1.11.3.

A.9.2.26.2 Test parameters

In this test case the PCell is TDD and SCell is FDD. Both RSRQ absolute and relative accuracy requirements of the primary and secondary component carrier are tested by using test parameters specified in Table A.9.2.26.2-1. In the test, Cell 1 is the PCell, Cell 2 is the SCell on the Secondary Component Carrier (SCC). The SCC is configured and activated.

The parameters of this test are given in Table A.9.2.26.2-1.

Table A.9.2.26.2-1: RSRQ for E-UTRAN TDD-FDD Carrier Aggregation with PCell in TDD test parameters

Pa	arameter	Unit	Cell 1	Cell 2
E-UTRA RF	Channel Number		1	2
BW _{channel}			5MHz: $N_{RB,c} = 25$ 10MHz: $N_{RB,c} = 50$ 20MHz: $N_{RB,c} = 100$	5MHz: $N_{RB,c} = 25$ 10MHz: $N_{RB,c} = 50$ 20MHz: $N_{RB,c} = 100$
Special subf configuration	n ^{Note1}		6	-
Uplink-down	Uplink-downlink configuration Note1		1	-
Measureme	nt bandwidth	$n_{{\scriptscriptstyle PRB}}$	5MHz: 10-15 10MHz: 22-27 20MHz: 47-52	5MHz: 10-15 10MHz: 22-27 20MHz: 47-52
PDSCH Reformeasurement in A.3.1.1	erence nt channel defined		5MHz: R.4 TDD 10MHz: R.0 TDD 20MHz: R.3 TDD	5MHz: R.5 FDD 10MHz: R.0 FDD 20MHz: R.4 FDD
PDSCH allo		n_{PRB}	5MHz: 7-17 10MHz: 13-36 20MHz: 38-61	5MHz: 7-17 10MHz: 13-36 20MHz: 38-61
Reference m	FICH/PHICH neasurement ned in A.3.1.2		5MHz: R.11 TDD 10MHz: R.6 TDD 20MHz: R.10 TDD	5MHz: R.11 FDD 10MHz: R.6 FDD 20MHz: R.10 FDD
A.3.2	OCNG Patterns defined in		5MHz: OP.9 TDD 10MHz: OP.1 TDD 20MHz: OP.7 TDD	5MHz: OP.15 FDD 10MHz: OP.1 FDD 20MHz: OP.11 FDD
PBCH_RB PSS_RA SSS_RA PCFICH_RE PHICH_RA PHICH_RB	PSS_RA SSS_RA PCFICH_RB PHICH_RA		0	0
PDCCH_RB PDSCH_RA PDSCH_RB	PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RB OCNG_RA ^{Note2}			
	Bands TDD_A		-119.5	-
	Bands TDD_C		-118.5	-
	Bands TDD_E		-117.5	-
	Bands FDD_A		-	-116
N Note3	Bands FDD_B Bands FDD_C	alDree /4.5. Let la	<u>-</u>	-115.5 -115
$N_{oc}^{ m Note3}$	Bands FDD_D	dBm/15 kHz	<u> </u>	-114.5
	Bands FDD_E, Bands FDD_F Note 6		-	-114
	Bands FDD_G]	-	-113
	Bands FDD_H		-	-112.5
\hat{E}_s/N_{oc}		dB	-6.0	-6.0
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	-6.0	-6.0
	Bands TDD_A		-125.50	-
	Bands TDD_C]	-124.50	-
	Bands TDD_E		-123.50	-
RSRP ^{Note4}	Bands FDD_A	dBm/15 kHz	-	-122
	Bands FDD_B]	-	-119.5
	Bands FDD_C]	-	-121
	Bands FDD_D		-	-120.5

	Bands FDD_E, Bands FDD_F Note 6		-	-120	
	Bands FDD_G		-	-119	
	Bands FDD_H		-	-118.5	
	Bands TDD_A				
	Bands TDD_C		-17.77	-	
	Bands TDD_E				
	Bands FDD_A				
	Bands FDD_B				
RSRQ ^{Note4}	Bands FDD_C	dB			
KSKQ	Bands FDD_D	uБ			
İ	Bands FDD_E,		-	-17.77	
	Bands FDD_F				
	Bands FDD_G				
	Bands FDD_H				
	Bands TDD_A		-90.75 + 10log(N _{RB,0} /50)	-	
			-89.75 +		
	Bands TDD_C		10log(N _{RB,c} /50)	-	
-	5		-88.75 +		
	Bands TDD_E	_	10log(N _{RB,0} /50)	-	
	Bands FDD_A		<u> </u>	-87.25 +	
	Danus FDD_A		•	10log(N _{RB,c} /50)	
	Bands FDD_B			-85.17	
Io ^{Note4}	Bands FDD_C	dBm/BW _{channel}	-	-86.25 + 10log(N _{RB,} √50)	
	D 1 500 0			-85.75 +	
ı	Bands FDD_D		-	10log(N _{RB,c} /50)	
	Bands FDD_E,			-85.25 +	
	Bands FDD_F		-	10log(N _{RB,c} /50)	
	Bands FDD_G		-	-84.25 +	
	24.140.122_0			10log(N _{RB,c} /50)	
	Bands FDD_H		-	-83.75 +	
				10log(N _{RB,o} /50)	
Propagation Condition			AWGN	AWGN	
Antenna Configuration			1x2	1x2	
Timing offs		μs	-	0	
Time aligni cell 1 Note 10	ment error relative to		-	≤TAE	
Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in					

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate

power for N_{oc} to be fulfilled.

Note 4: Es/lot, RSRP, RSRQ and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

Note 6: For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.

Note 7: The selection of the bands for testing depends on the configuration of the carrier aggregation supported by the UEs.

Note 8: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Note 9: E-UTRA operating band groups are as defined in Section 3.5.

Note 10: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

A.9.2.26.3 Test Requirements

In the test, the RSRQ measurement accuracy in carrier aggregation shall fulfil the requirements in section 9.1.11.1, 9.1.11.2, and 9.1.11.3.

- The absolute accuracy of intra-frequency RSRQ measurements of Cell 1 on the primary component carrier shall fulfil the requirements defined in clause 9.1.11.1.
- The absolute accuracy of intra-frequency RSRQ measurements of Cell 2 on the secondary component carrier shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of inter-frequency RSRQ measurements between the primary and secondary component carriers for Cell 2 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.11.3.A.9.2.27 TDD RSRQ for E-UTRAN Carrier Aggregation for 20MHz+10MHz

The test case in this section are applicable to carrier aggregation capable UEs which have been configured with a downlink SCell.

A.9.2.27.1 Test Purpose and Environment

The purpose of this test is the same as defined in Subclause A.9.2.6.1.

A.9.2.27.2 Test parameters

The parameters of this test are the same as defined in Subclause A.9.2.6.2 except that the values of the parameters in the Table A.9.2.27.2-1 will replace the values of the corresponding parameters in A.9.2.6.2-1.

Table A.9.2.27.2-1: TDD RSRQ Carrier Aggregation test parameters

	4	Test 1				
Pa	rameters	Units	Cell 1	Cell 2	Cell 3	
BW _{channel_C/}	Note1	MHz	20	1	0	
Measureme	ent bandwidth	$n_{\scriptscriptstyle PRB}$	47-52	22	-27	
PDSCH Reference measurement channel defined in A.3.1.1.2			R.3 TDD	R.0 TDD	-	
PDSCH allo	ocation	$n_{\scriptscriptstyle PRB}$	38-61	13-36	-	
Reference	FICH/PHICH measurement fined in A.3.1.2.2		R.10 TDD	R.6 TDD		
A.3.2.2.7 (C A.3.2.2.1 (C	OCNG Patterns defined in A.3.2.2.7 (OP.7 TDD), A.3.2.2.1 (OP.1 TDD) and A.3.2.2.2 (OP.2 TDD)		OP.7 TDD	OP.1 TDD	OP.2 TDD	
	Bands TDD_A	ID (4004)	-87.26		/ 0	
	Bands TDD_C	dBm/18MHz	-86.26	N/A		
Io ^{Note2}	Bands TDD_E		-85.26			
	Bands TDD_A			-85	5.67	
	Bands TDD_C		N/A	-84	.67	
	Bands TDD_E			-83	3.67	
Note 1: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1. Note 2: lo levels have been derived from other parameters for information						
purposes. They are not settable parameters themselves Note 3: See Table A.9.2.6.2-1 for the other parameters						

A.9.2.27.3 Test Requirements

The test requirements defined in section A.9.2.6.3 shall apply in this test case.

A.9.2.28 FDD intra-frequency absolute RSRQ accuracy with CRS based discovery signal

A.9.2.28.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Clause 9.1.14.4.

A.9.2.28.2 Test parameters

In this test case all cells are on the same carrier frequency. The absolute accuracy of RSRQ intra frequency measurement for Cell 2 is tested by using the parameters in Table A.9.2.28.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell. Cell 2 DMTC configuration is provided to the UE in the *measDS-Config* before the start of the test.

Table A.9.2.28.2-1: RSRQ FDD Intra frequency test parameters

	Parameter	Unit	Tes	
		Offic	Cell 1	Cell 2
	hannel Number			1
BW _{channel}		MHz		0
Measurement	bandwidth	$n_{\it PRB}$	22-	–27
DMTC period		ms	N/A	160
DMTC period		ms	N/A	10
	nal occasion duration etween cell 1 and cell 2	ms	N/A	1
	ence measurement channel defined in	μs	0 R.0	2.3
A.3.1.1.1			FDD	-
PDSCH alloca	ation	n_{PRB}	13—36	-
	CH/PHICH Reference measurement	PRB		FDD
CONG Pattern	ns defined in A.3.2.1.1 (OP.1 FDD)		OP.1	OP.2
and A.3.2.1.2			FDD	FDD
PBCH_RA	(0) = 1 = 2			
PBCH_RB				
PSS_RA				
SSS_RA				
PCFICH_RB PHICH RA				
PHICH_RB		dB	0	0
PDCCH RA		uБ		0
PDCCH_RB				
PDSCH_RA				
PDSCH_RB				
OCNG_RA ^{Note1} OCNG_RB ^{Note1}				
	, ' 			
$N_{oc}^{ m Note2}$	Bands FDD_A		-1	16
	Bands FDD_B			5.5
	Bands FDD_C	dBm/15 kHz		15
	Bands FDD_D Bands FDD_E, FDD_F Note 5	abilii io ki iz		4.5
	Bands FDD_E, FDD_F Bands FDD_G Note 7		<u> </u>	14 13
	Bands FDD_H		<u> </u>	2.5
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	-5.46	-5.46
RSRP ^{Note3}	Davida EDD A			
RSRP	Bands FDD_A		-120 -119.5	-120 -119.5
	Bands FDD_B Bands FDD_C		-119.5	-119.5
	Bands FDD D	dBm/15 kHz	-118.5	-118.5
	Bands FDD E, FDD F Note 5		-118	-118
	Bands FDD_G Note 7		-117	-117
DOD C Note3	Bands FDD_H		-116.5	-116.5
RSRQ ^{Note3}	Bands FDD_A			
	Bands FDD_B Bands FDD_C			
	Bands FDD_C Bands FDD_D	dB	-17.34	-17.34
	Bands FDD E. FDD F Note 5	40	17.04	17.04
	Bands FDD_G Note 7			
	Bands FDD_H			
lo ^{Note3}	Bands FDD_A			.67
	Bands FDD_B			.17
	Bands FDD_C	dBm/9 MHz	†	.67
	Bands FDD_D Bands FDD_E, FDD_F Note 5		<u> </u>	.17 .67
	Bands FDD_E, FDD_F Bands FDD_G Note 7		ł	.67
	Bands FDD_G Bands FDD H		1	17
\hat{E}_s/N_{oc}		dB	-4	-4
	on dition	<u> </u>		'GN
Propagation c	OHURION	-	AVV	GIN

Note 1: Note 2:	OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols. Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as
	AWGN of appropriate power for N_{oc} to be fulfilled.
Note 3:	RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
Note 4:	RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
Note 5:	For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.
Note 6:	E-UTRA operating band groups are as defined in Section 3.5.
Note 7:	Except Band 29 and Band 32.

A.9.2.28.3 Test Requirements

The absolute accuracy of RSRQ intra frequency measurement for Cell 2 shall fulfil the requirements in Clause 9.1.14.4.

A.9.2.29 TDD intra-frequency absolute RSRQ accuracy with CRS based discovery signal

A.9.2.29.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Clause 9.1.14.4.

A.9.2.29.2 Test parameters

In this test case all cells are on the same carrier frequency. The absolute accuracy of RSRQ intra frequency measurement for Cell 2 is tested by using the parameters in Table A.9.2.29.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell. Cell 2 DMTC configuration is provided to the UE in the *measDS-Config* before the start of the test.

Table A.9.2.29.2-1: RSRQ TDD Intra frequency test parameters

	Daramatar	Unit	Test 1	
	Parameter	Unit	Cell 1	Cell 2
	hannel Number			1
BW _{channel}	Note1	MHz		10
Special subfra	me configuration ^{Note1}		6	
Uplink-downlin	k configuration ^{Note1}			1
Measurement	bandwidth	n_{PRB}	22	<u>27</u>
DMTC period		ms	N/A	160
DMTC period		ms	N/A	10
Discovery signal occasion duration		ms	N/A	2
	tween cell 1 and cell 2	μs	0	2.3
	ence measurement		R.0	_
channel define			TDD	
PDSCH alloca		n_{PRB}	13—36	-
	CH/PHICH Reference			
	channel defined in		R.6	S TDD
A.3.1.2.2	defined in A.3.2.2.1 (OP.1		OP.1	OP.2
TDD) and A.3.2.			TDD	TDD
PBCH_RA				
PBCH_RB				
PSS_RA				
SSS_RA				
PCFICH_RB		dB		
PHICH_RA				
PHICH_RB			0	0
PDCCH_RA PDCCH_RB				
PDSCH_RA		-		
PDSCH_RB		-		
OCNG_RA ^{Note}	1	-		
OCNG RB ^{Note}	1	1		
	Bands FDD_A		-	116
$N_{oc}^{ m Note2}$	Bands FDD_B	dBm/15	-115.5	
- · oc	Bands FDD_C	kHz	-115 -114	
	Bands FDD_E	1		
\hat{E}_{s}/I_{ot}	_	dB	-5.46	-5.46
-s/-ot	Bands FDD A		-120	-120
	Bands FDD_B	- ID. //.5	-119.5	-119.5
RSRP ^{Note3}	Bands FDD_C	dBm/15 kHz	-119.5	-119.5
	Bands FDD_E	- NIZ	-118	-118
	Bands FDD_A		110	110
	Bands FDD_A Bands FDD_B			
RSRQ ^{Note3}	Bands FDD_C	dB	-17.34	-17.34
	Bands FDD_E			
	Bands FDD_A		-8	5.67
lo ^{Note3} Bands FDD_B Bands FDD_C		dBm/9		5.17
		MHz	-84.67	
	Bands FDD_E		-83.67	
\hat{E}_s/N_{oc}		dB	-4	-4
Propagation co	ondition	-	A۱	VGN
Note 1: For special subframe and uplink-downlink configurations see				

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time

the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for

 N_{oc} to be fulfilled.

Note 4:	RSRQ, RSRP and lo levels have been derived from other
	parameters for information purposes. They are not settable
	parameters themselves.
Note 5:	RSRP and RSRQ minimum requirements are specified
	assuming independent interference and noise at each receiver
	antenna port.
Note 6:	E-UTRA operating band groups are as defined in Section 3.5.

A.9.2.29.3 Test Requirements

The absolute accuracy of RSRQ intra frequency measurement for Cell 2 shall fulfil the requirements in Clause 9.1.14.4.

A.9.2.30 FDD-FDD inter-frequency absolute and relative RSRQ accuracies with CRS based discovery signal

A.9.2.30.1 Test Purpose and Environment

The purpose of this test is to verify that the absolute and relative accuracy of RSRQ measurement in discovery signal occasions is within the specified limits. This test will verify the requirements in Sections 9.1.14.4.

A.9.2.30.2 Test parameters

In this test case the two cells are on different carrier frequencies and measurement gaps are provided. Both RSRQ inter frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.2.30.2-1. In all tests, Cell 1 is the PCell and Cell 2 the target cell. For measurement of the carrier frequency of Cell 2, DMTC configuration is provided to the UE in the *measDS-Config* before the start of the test.

Table A.9.2.30.2-1: RSRQ in discovery signal occasions FDD—FDD Inter frequency test parameters

			Tes	st 1
	ameter	Unit	Cell 1	Cell 2
E-UTRA RF Chann	nel Number		1	2
BW _{channel}		MHz	10	10
Gap Pattern Id			0	-
Gap Offset		ms	9	-
DMTC period	1	ms	-	160
DMTC period offse		ms	<u>-</u>	10 1
Discovery signal or Time offset between		ms	- ,	<u>'</u> 3
Measurement band		μS		-27
PDSCH Reference		n_{PRB}	22.	-21
channel defined in			R.0 FDD	-
PDSCH allocation	A.O. 1.1.1	n	13-36	-
PDCCH/PCFICH/P	DUICH Deference	n_{PRB}	13-30	_
measurement char			R 6	FDD
A.3.1.2.1	inor defined in		11.0	
OCNG Patterns de	fined in A.3.2.1.1		0D 4 EDD	OD 0 EDD
(OP.1 FDD) and A	.3.2.1.2 (OP.2 FDD)		OP.1 FDD	OP.2 FDD
PBCH_RA				
PBCH_RB		1		
PSS_RA				
SSS_RA		4		
PCFICH_RB		4		
PHICH_RA		- 40	0	0
PHICH_RB PDCCH_RA		dB	0	0
PDCCH_RB		1		
PDSCH_RA		1		
PDSCH RB		-		
OCNG_RA ^{Note1}				
OCNG_RB ^{Note1}		1		
	Bands FDD_A		-117.5	-117.5
	Bands FDD_B] [-117	-117
	Bands FDD_C		-116.5	-116.5
$N_{oc}^{ m Note2}$	Bands FDD_D	dBm/15	-116	-116
	Bands FDD_E, FDD_F Note 5	kHz	-115.5	-115.5
	FDD_F Note 7	-	444.5	444.5
	Bands FDD_G Note 7 Bands FDD_H	-	-114.5 -114	-114.5 -114
-	Dalius FDD_IT		-114	-114
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$		dB	-6	-6
	Bands FDD_A		-123.5	-123.5
	Bands FDD_B	<u> </u>	-123	-123
	Bands FDD_C	<u> </u>	-122.5	-122.5
RSRP ^{Note3}	Bands FDD_D	dBm/15	-122	-122
_	Bands FDD_E, FDD_F Note 5	kHz	-121.5	-121.5
	Pondo FDD C Note 7	4		
	Bands FDD_G Note 7 Bands FDD_H	-	-120.5	-120.5
	Bands FDD_H Bands FDD_A		-120	-120
	Bands FDD_B	┪ ┃		
	Bands FDD_C	1		
DOD O Note3	Bands FDD_D	† <u>.</u>	. 	
RSRQ ^{Note3}		dB	-17.77	-17.77
	Bands FDD_E, FDD_F Note 5	_		
	Bands FDD_G Note 7			
	Bands FDD_H			
	Bands FDD_A		-88.75	-88.75
Noto?	Bands FDD_B	dBm/9	-88.25	-88.25
Io ^{Note3}	Bands FDD_C	- MHz	-87.75	-87.75
	Bands FDD_D	ا ''''' <u>'</u> ا	-87.25	-87.25
	Bands FDD_E,		-86.75	-86.75

	FDD_F Note 5			
	Bands FDD_G Note 7		-85.75	-85.75
	Bands FDD_H		-85.25	-85.25
\hat{E}_s/N_{oc}		dB	-6	-6
Propagati	ion condition	-	AW	'GN
Note 1:	OCNG shall be used such that b			
	transmitted power spectral dens			
Note 2:	Interference from other cells and			
	assumed to be constant over su	bcarriers and	d time and shall be r	modelled as
	AWGN of appropriate power for	N_{oc} to be full	filled.	
Note 3:	RSRQ, RSRP and lo levels have			neters for
	information purposes. They are not settable parameters themselves.			
Note 4:	· · · · · · · · · · · · · · · · · · ·			
	interference and noise at each receiver antenna port.			
Note 5:	Note 5: For Band 26, the tests shall be performed with the carrier frequency of the			ncy of the
	assigned E-UTRA channel bandwidth within 865-894 MHz.			-
Note 6:	<u> </u>			
Note 7:	Except Band 29 and Band 32.			

A.9.2.30.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Sections 9.1.14.4.

A.9.2.31 TDD-TDD inter-frequency absolute and relative RSRQ accuracies with CRS based discovery signal

A.9.2.31.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy in discovery signal occasions is within the specified limits. This test will verify the requirements in Sections 9.1.14.4.

A.9.2.31.2 Test parameters

In this test case the two cells are on different carrier frequencies and measurement gaps are provided. Both RSRQ inter frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.2.31.2-1 for TDD configuration 1. In all tests, Cell 1 is the PCell and Cell 2 the target cell. DMTC configuration for Cell 2 is provided to UE in the *measDS-Config* before the start of the test.

Table A 9.2.31.2-1: RSRQ TDD—TDD Inter frequency test parameters for TDD configuration 1

P	arameter	Unit	Test 1		
		Offic	Cell 1	Cell 2	
E-UTRA RF Chan	nel Number		1	2	
BW _{channel}		MHz	10	10	
Gap Pattern Id			9	-	
Gap Offset DMTC period		mo	9	160	
DMTC period offse	ot .	ms ms		100	
Discovery signal of		ms	_	2	
Time offset between		μς	0	3	
Special subframe		μο		5 5	
Uplink-downlink co	onfiguration Note1		•	1	
Measurement ban		$n_{\it PRB}$	22-	-27	
PDSCH Reference	e measurement channel	TRD			
defined in A.3.1.1.			R.0 TDD	-	
PDSCH allocation		$n_{\it PRB}$	13—36	-	
PDCCH/PCFICH/I			R.6	TDD	
	nnel defined in A.3.1.2.2 efined in A.3.2.2.1 (OP.1			I	
TDD) and A.3.2.2.			OP.1 TDD	OP.2 TDD	
PBCH_RA	2 (01 .2 100)				
PBCH_RB					
PSS_RA				0	
SSS_RA					
PCFICH_RB					
PHICH_RA			0		
PHICH_RB		dB			
PDCCH_RA]			
PDCCH_RB					
PDSCH_RA					
PDSCH_RB OCNG_RA ^{Note2}					
OCNG_RA OCNG RB ^{Note2}					
_	Bands TDD A		-117.50	-117.50	
$N_{oc}^{ m Note3}$	Bands TDD C	dBm/15 kHz	-116.50	-116.50	
	Bands TDD E	3511, 10 KHZ	-115.50	-115.50	
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	Burido 188_E	dB	-6.0	-6.0	
L _s /I _{ot}	Panda TDD A	ub_			
RSRP ^{Note4}	Bands TDD_A Bands TDD_C	dBm/15 kHz	-123.50 -122.50	-123.50 -122.50	
KSKP	Bands TDD_E	UDIII/13 KHZ			
			-121.50	-121.50	
RSRQ ^{Note4}	Bands TDD_A, TDD_C, TDD_E	dB	-17.77	-17.77	
	Bands TDD_A		-88.75	-88.75	
Io ^{Note4}	Bands TDD_C	dBm/9 MHz	-87.75	-87.75	
	Bands TDD_E		-86.75	-86.75	
\hat{E}_s/N_{oc}		dB	-6.0	-6.0	
Propagation condi	tion	-	AW	'GN	
	ecial subframe and uplink-d	lownlink configuration			

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as

AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: RSRP minimum requirements are specified assuming independent

interference and noise at each receiver antenna port.

Note 6: E-UTRA operating band groups are as defined in Section 3.5.

A.9.2.31.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Sections 9.1.14.4.

A.9.2.32 FDD absolute and relative RSRQ accuracy for E-UTRAN Carrier Aggregation in CRS based discovery signal

A.9.2.32.1 Test Purpose and Environment

The purpose of this test is to verify that the FDD RSRQ measurement accuracy for carrier aggregation in CRS based discovery signal is within the specified limits under AWGN propagation conditions. This test will verify the absolute and relative accuracy of intra-frequency RSRQ measurements for the secondary component carrier specified in clause 9.1.15.1.2, and also the relative inter-frequency RSRQ accuracy requirement between primary and secondary component carriers specified in clause 9.1.15.1.3.

A.9.2.32.2 Test parameters

In this test case the PCell and the SCell are on different carrier frequencies. There are three cells used in this test case. RSRQ absolute and relative accuracy requirements of the primary and secondary component carrier are tested by using test parameters specified in Table A.9.2.32.2-1. In the test, Cell 1 is the PCell, Cell 2 is the SCell on the Secondary Component Carrier (SCC) and Cell 3 is the neighbouring cell on the SCC. Cell 2 on SCC is configured and activated. Cell 3 DMTC configuration is provided to the UE in the *measDS-Config* before the start of the test.

Table A.9.2.32.2-1: FDD RSRQ Carrier Aggregation Test Parameters

Test 1					
Paran	neters	Units	Cell 1	Cell 2	Cell 3
E-UTRA RF Channel	Number		1	2	2
BW _{channel_CA}		MHz	10	10	10
DMTC period			N/A	N/A	160
DMTC period offset			N/A	N/A	10
Discovery signal occa			N/A	N/A	1
Timeing offset to Cell	1	μs	-	0	3
Time alignment error between cell 2 and cell 1			-	≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1	-
Measurement bandwid	dth	$n_{\it PRB}$	22—27	22—27	22—27
PDSCH Reference me defined in A.3.1.1.1	easurement channel		R.0 FDD	R.0 FDD	-
PDSCH allocation		$n_{\it PRB}$	13—36	13—36	-
PDCCH/PCFICH/PHIC measurement channe	I defined in A.3.1.2.1		R.6 FDD	R.6FDD	R.6 FDD
	OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD) and A.3.2.1.2 (OP.2 FDD)		OP.1 FDD	OP.1 FDD	OP.2 FDD
PBCH_RA) .Z I DD)		100	100	100
PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RA ^{Note1} OCNG_RB ^{Note1}		dB	0	0	0
	Bands FDD_A		-119.5	-116	-116
	Bands FDD_B		-119	-115.5	-115.5
λ7 Note2	Bands FDD_C	-ID /4.5	-118.5	-115	-115
$N_{oc}^{$ Note2	Bands FDD_D Bands FDD_E, FDD_F Note 6	dBm/15 kHz	-118 -117.5	-114.5 -114	-114.5 -114
	Bands FDD_G		-116.5	-113	-113
	Bands FDD H		-116	-112.5	-112.5
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	-4.0	-5.46	-5.46
	Bands FDD_A		-123.5	-120	-120
	Bands FDD_B		-123	-119.5	-119.5
	Bands FDD_C		-122.5	-119	-119
RSRP ^{Note3}	Bands FDD_D	dBm/15	-122	-118.5	-118.5
	Bands FDD_E, FDD_F Note 6	kHz	-121.5	-118	-118
Bands FDD_G			-120.5	-117	-117
	Bands FDD_H		-120	-116.5	-116.5
	Bands FDD_A				
	Bands FDD_B				
RSRQ ^{Note3}	Bands FDD_C	dB	-16.25	-17.34	-17.34
	Bands FDD_D	40	10.20	17.04	17.04
	Bands FDD_E, FDD_F Note 6				

	Bands FDD_G					
	Bands FDD_H	1				
	Bands FDD_A	dBm/9 MHz	-90.26	-85.67	-85.67	
	Bands FDD_B		-89.76	-85.17	-85.17	
	Bands FDD_C		-89.26	-84.67	-84.67	
lo ^{Note3}	Bands FDD_D		-88.76	-84.17	-84.17	
10	Bands FDD_E, FDD_F Note 6		-88.26	-83.67	-83.67	
	Bands FDD_G		-87.26	-82.67	-82.67	
	Bands FDD_H		-86.76	-82.17	-82.17	
\hat{E}_s/N_{oc}	\hat{E}_s/N_{oc}		-4.0	-4.0	-4.0	
Propagation condition		-	AWGN			
Note 1:	OCNG shall be used such that both cells are fully allocated and a constant total					
	transmitted power spectral density is achieved for all OFDM symbols.					
Note 2:	The state of the s					
	be constant over subcarriers and time and shall be modelled as AWGN of					
appropriate power for N_{oc} to be fulfilled.						
Note 3:						
Note 3:	RSRQ, RSRP and lo levels have been derived from other parameters for information					
Note 4:	purposes. They are not settable parameters themselves.					
Note 4.	RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.					
Note 5:						
14010 0.	aggregation supported by the UEs					
Note 6:						
11010 01	E-UTRA channel bandwidth within 865-894 MHz.					
Note 7:	This test verifies the RRM requirement which is independent of channel bandwidth					
	and is performed according to the principle defined in section A.3.6.1.					
Note 8:	E-UTRA operating band groups are as defined in Section 3.5.					

A.9.2.32.3 Test Requirements

In the test, the RSRQ measurement accuracy in carrier aggregation shall fulfil the requirements in clause 9.1.15.1.1, 9.1.15.1.2, and 9.1.15.1.3.

- The absolute accuracy of intra-frequency RSRQ measurements of Cell 3 on the secondary component carrier shall fulfil the requirements specified in clause 9.1.15.1.2.
- The relative accuracy of intra-frequency RSRQ measurements between Cell 2 and Cell 3 on the secondary component carrier shall fulfil the requirements specified in clause 9.1.15.1.2.
- The relative accuracy of inter-frequency RSRQ measurements between Cell 1 on primary component carriers and Cell 3 on the secondary component carrier shall fulfil the requirements specified in clause 9.1.15.1.3.

A.9.2.33 TDD absolute and relative RSRQ accuracy for E-UTRAN Carrier Aggregation in CRS based discovery signal

A.9.2.33.1 Test Purpose and Environment

The purpose of this test is to verify that the TDD RSRQ measurement accuracy for carrier aggregation in CRS based discovery signal is within the specified limits under AWGN propagation conditions. This test will verify the absolute and relative accuracy of intra-frequency RSRQ measurements for the secondary component carrier specified in clause 9.1.15.1.2, and also the relative inter-frequency RSRQ accuracy requirement between primary and secondary component carriers specified in clause 9.1.15.1.3.

A.9.2.33.2 Test parameters

In this test case the PCell and the SCell are on different carrier frequencies. There are three cells used in this test case. RSRQ absolute and relative accuracy requirements of the primary and secondary component carrier are tested by using test parameters specified in Table A.9.2.33.2-1. In the test, Cell 1 is the PCell, Cell 2 is the SCell on the Secondary

Component Carrier (SCC) and Cell 3 is the neighbouring cell on the SCC. Cell 2 on SCC is configured and activated. Cell 3 DMTC configuration is provided to the UE in the *measDS-Config* before the start of the test.

Table A.9.2.33.2-1: TDD RSRQ Carrier Aggregation Test Parameters

Para	Unit	Test 1				
	Onit	Cell 1	Cell 2	Cell 3		
E-UTRA RF Char	nel Number	N 41 1-	1	2 2		
BW _{channel}		MHz	NI/A	10		
DMTC period offs	DMTC period offeet		N/A N/A	N/A N/A	160 10	
			N/A	N/A N/A	10	
Discovery signal occasion duration Timing offset to cell 1		μs	-	0	3	
Time alignment error between cell 2 and cell 1		μο	-	≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1	-	
Special subframe	configuration ^{Note1}			6		
Uplink-downlink c	onfiguration ^{Note1}			1		
Measurement bar	n_{PRB}		22—27			
PDSCH Reference channel defined in			R.0 TDD	R.0 TDD	-	
PDSCH allocation	1	n_{PRB}	13—36	13—36	-	
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.2			R.6 TDD	R.6 TDD	R.6 TDD	
OCNG Patterns defined in A.3.2.2.1 (OP.1 TDD) and A.3.2.2.2 (OP.2 TDD)			OP.1 TDD	OP.1 TDD	OP.2 TDD	
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RA PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RA OCNG_RB OCNG_RB		dB	0	0	0	
$N_{oc\ Note3}$	Bands TDD_A	dBm/15 kHz	-119.5	-116		
	Bands TDD_C Bands TDD_E	GDIII/ IO KI IZ	-118.5 -117.5	-115 -114		
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	ם במוועט דטט_ב	dB	-4.0	-5.46	+ -5.46	
	Bands TDD_A		-123.50	-120	-120	
RSRP ^{Note4}	Bands TDD_C	dBm/15 kHz	-122.50	-119	-119	
1.01.11		GDIII/ IO KI IZ				
RSRQ ^{Note4}	Bands TDD_E Bands TDD_A, TDD_C, TDD_E	dB	-121.50 -16.25	-118 -118 -17.34		
	Bands TDD_A		-90.26	-85.67		
lo ^{Note4}	Bands TDD_C	dBm/9 MHz	-89.26	-84.67		
	Bands TDD_E	J GDITI/ & IVII IZ	-88.26	-83.67		
\hat{E}_s/N_{oc}		dB	-4.0	-4.0	-4.0	
Propagation cond	ition	-		AWGN		

Note 1:	For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.
Note 2:	OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
Note 3:	Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled
	as AWGN of appropriate power for N_{oc} to be fulfilled.
Note 4:	RSRQ, RSRP and lo levels have been derived from other parameters for
	information purposes. They are not settable parameters themselves.
Note 5:	RSRP and RSRQ minimum requirements are specified assuming
	independent interference and noise at each receiver antenna port.
Note 6:	The selection of the bands for testing depends on the configuration of the
	carrier aggregation supported by the UEs.
Note 7:	This test verifies the RRM requirement which is independent of channel
	bandwidth and is performed according to the principle defined in section
	A.3.6.1.
Note 8:	E-UTRA operating band groups are as defined in Section 3.5.

A.9.2.33.3 Test Requirements

In the test, the RSRQ measurement accuracy in carrier aggregation shall fulfil the requirements in clause 9.1.15.1.1, 9.1.15.1.2, and 9.1.15.1.3.

- The absolute accuracy of intra-frequency RSRQ measurements of Cell 3 on the secondary component carrier shall fulfil the requirements specified in clause 9.1.15.1.2.
- The relative accuracy of intra-frequency RSRQ measurements between Cell 2 and Cell 3 on the secondary component carrier shall fulfil the requirements specified in clause 9.1.15.1.2.
- The relative accuracy of inter-frequency RSRQ measurements between Cell 1 on primary component carriers and Cell 3 on the secondary component carrier shall fulfil the requirements specified in clause 9.1.15.1.3.

A.9.2.34 FDD—FDD Inter frequency new RSRQ

A.9.2.34.1 Test Purpose and Environment

The purpose of this test is to verify that the absolute accuracy of RSRQ measurement is within the specified limits when measurement configuration message received by the UE contains *measRSRQ-OnAllSymbols-r12* parameter in TS 36.331 [2]. This test will verify the requirements in Sections 9.1.16.

A.9.2.34.2 Test parameters

In this test case the two cells are on different carrier frequencies and measurement gaps are provided. The new RSRQ inter frequency absolute accuracy requirement is tested by using test parameters in Table A.9.2.34.2-1. In the test, Cell 1 is the PCell and Cell 2 the target cell.

Table A.9.2.34.2-1: New RSRQ FDD—FDD Inter frequency test parameters

Pai	rameter	Unit		st 1
		Oilit	Cell 1	Cell 2
E-UTRA RF Chan	nel Number		1	2
BW _{channel}		MHz	10	10
Gap Pattern Id	ation		0	1x2
Antenna Configura Time offset between			1x2	
Measurement ban		μS	3 22-27	
PDSCH Reference		$n_{\scriptscriptstyle PRB}$		
channel defined in			R.0 FDD	-
PDSCH allocation	7	n_{PRB}	_	-
PDCCH/PCFICH/F	PHICH Reference	PRB		
measurement cha			R.6 FDD	-
A.3.1.2.1				
OCNG Patterns de	efined in A.3.2.1.1		OP.1 FDD	_
(OP.1 FDD)			OF.1 FDD	-
PBCH_RA				0
PBCH_RB		i		0
PSS_RA SSS_RA				0
PCFICH_RB				_∞
PHICH_RA				-∞
PHICH_RB		dB	0	_∞
PDCCH_RA		<u> </u>		-∞
PDCCH_RB				-∞
PDSCH_RA				-∞
PDSCH_RB				-∞
OCNG_RA ^{Note1}				-∞
OCNG_RB ^{Note1}				-∞
I Note2	Symbols with CRS,	-ID /4.5	-103.85	-103.85
$I_{ot}^{$	PSS, SSS or PBCH All the other	dBm/15 kHz		
	symbols		-94.75	-94.75
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	c)c.c	dB	-3	-3
$\mathbf{L}_{\mathrm{s}}/1_{\mathrm{ot}}$			-3	-5
RSRP ^{Note3}		dBm/15 kHz	-106.85	-106.85
	Subframe 0	dB	-14.54	-14.54
RSRQ ^{Note3}	Subframes other		-14.14	-14.14
	than 0			
	Subframe 0		-19.57	-19.57
New RSRQ ^{Note3}	Subframe 5 Subframe other than	dB	-20.93	-20.93
	0 or 5		-21.66	-21.66
	Symbol 0/4/11		-75.72	-75.72
lo in subframe	Symbol 1/2/3/12/13	dBm/ 9	-66.97	-66.97
0 ^{Note3}	Symbol 5/6/8/9/10	MHz	-75.81	-75.81
	Symbol 7		-75.52	-75.52
	Symbol 0/4/7/11	dBm/ 9 MHz	-75.72	-75.72
lo in subframe 5 ^{Note3}	Symbol 1/2/3/8/9/10/12/13		-66.97	-66.97
5	Symbol 5/6		-75.81	-75.81
	Symbol 0/4/7/11		-75.72	-75.72
lo in subframes other than 0 or 5 Note3	Symbol 1/2/3/5/6/8/9/10/12/ 13	dBm/ 9 MHz	-66.97	-66.97
Propagation condi		-	AW	/GN
	shall he used such that h			

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total

transmitted power spectral density is achieved for all OFDM symbols. Interference from other cells and noise sources not specified in the test is Note 2: assumed to be constant over subcarriers and time and shall be modelled as

AWGN of appropriate power for $^{N_{oc}}$ to be fulfilled. RSRQ, RSRP, new RSRQ and lo levels have been derived from other Note 3:

parameters for information purposes. They are not settable parameters themselves. The new RSRQ values assume RSSI averaging over all OFDM symbols of the subframe.

RSRP and RSRQ minimum requirements are specified assuming independent.

Note 4: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

A.9.2.34.3 Test Requirements

The new RSRQ measurement accuracy for cell 2 shall fulfil the requirements in Section 9.1.16, compared with any nominal new RSRQ value in subframe 0, 5 or others.

A.9.2.35 TDD—TDD Inter frequency new RSRQ

A.9.2.35.1 Test Purpose and Environment

The purpose of this test is to verify that the absolute accuracy of RSRQ measurement is within the specified limits when measurement configuration message received by the UE contains *measRSRQ-OnAllSymbols-r12* parameter in TS 36.331 [2]. This test will verify the requirements in Sections 9.1.16.

A.9.2.35.2 Test parameters

In this test case the two cells are on different carrier frequencies and measurement gaps are provided. The new RSRQ inter frequency absolute accuracy requirement is tested by using test parameters in Table A.9.2.35.2-1. In the test, Cell 1 is the PCell and Cell 2 the target cell.

Table A.9.2.35.2-1: New RSRQ TDD—TDD Inter frequency test parameters

-		11.74	Tes	st 1
Para	ameter	Unit	Cell 1	Cell 2
E-UTRA RF Chann	el Number		1	2
BW _{channel}	r . Note1	MHz	10	10
Special subframe of Uplink-downlink co	onfiguration Note1		6	6
Gap Pattern Id	ntiguration		<u>1</u> 0	1
Antenna Configura	tion		1x2	1x2
Time offset betwee		μs		3
Measurement band		n_{PRB}		-27
PDSCH Reference		TRB	D A TDD	
channel defined in	A.3.1.1.2		R.0 TDD	-
PDSCH allocation		$n_{_{PRB}}$	-	-
PDCCH/PCFICH/P	HICH Reference			
measurement char	nel defined in		R.6 TDD	-
A.3.1.2.2				
OCNG Patterns de	fined in A.3.2.2.1		OP.1 TDD	-
(OP.1 TDD) PBCH RA				0
PBCH_RB				0
PSS_RA				0
SSS_RA				0
PCFICH_RB				-∞
PHICH_RA				-∞
PHICH_RB		dB	0	-∞
PDCCH_RA				-∞
PDCCH_RB				-∞
PDSCH_RA PDSCH_RB				-∞
OCNG_RA ^{Note1}				-∞
OCNG_RB ^{Note1}				-∞
_	Symbols with CRS,		100.05	
$I_{ot}^{ m Note2}$	PSS, SSS or PBCH	dBm/15	-103.85	-103.85
	All the other	kHz	-94.75	-94.75
• /	symbols		01.70	0 1.7 0
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	-3	-3
RSRP ^{Note3}		dBm/15 kHz	-106.85	-106.85
	Subframe 0	KITZ	-14.54	-14.54
RSRQ ^{Note3}	Subframes other	dB	-14.14	-14.14
	than 0 Subframe 0		-20.08	-20.08
	Subframe 5		-21.31	-21.31
New RSRQ ^{Note3}	Subframe 1 or 6	dB	-20.82	-20.82
	Subframe other than 0, 1, 5 or 6		-21.66	-21.66
	Symbol 0/4/11		-75.72	-75.72
lo in subframe	Symbol 1/2/3/5/6/12	dBm/ 9	-66.97	-66.97
0 ^{Note3}	Symbol 8/9/10/13	MHz	-75.81	-75.81
Ĭ	Symbol 7		-75.52	-75.52
Symbol 7 Symbol 0/4/7/11			-75.52 -75.72	-75.72
lo in subframe	Symbol	dBm/ 9		
5 ^{Note3}	1/2/3/5/6/8/9/10/12	MHz	-66.97	-66.97
	Symbol 13		-75.81	-75.81
lo in subframe 1	Symbol 0/4/7	dBm/ 9	-75.72	-75.72
or 6 ^{Note3}	Symbol 1/3/5/6/8 Symbol 2	MHz	-66.97 -75.81	-66.97 -75.81
	Symbol 0/4/7/11		-75.72	-75.72
lo in subframes other than 0, 1, 5 or 6 Note3	Symbol 1/2/3/5/6/8/9/10/12/ 13	dBm/ 9 MHz	-66.97	-66.97
Propagation condit	_	-	AW	'GN

Note 1:	For special subframe and uplink-downlink configurations see Tables 4.2-1 and
	4.2-2 in TS 36.211.
Note 2:	OCNG shall be used such that both cells are fully allocated and a constant total
	transmitted power spectral density is achieved for all OFDM symbols.
Note 3:	Interference from other cells and noise sources not specified in the test is
	assumed to be constant over subcarriers and time and shall be modelled as
	AWGN of appropriate power for N_{oc} to be fulfilled.
Note 4:	RSRQ, RSRP, new RSRQ and lo levels have been derived from other
11010 11	parameters for information purposes. They are not settable parameters
	themselves. The new RSRQ values assume RSSI averaging over all OFDM
	symbols of the subframe.
Note 5:	RSRP and RSRQ minimum requirements are specified assuming independent
	interference and noise at each receiver antenna port.

A.9.2.35.3 Test Requirements

The new RSRQ measurement accuracy for cell 2 shall fulfil the requirements in Section 9.1.16, compared with any nominal new RSRQ value in subframe 0, 5, 1, 6 or others.

A.9.2.36 FDD—FDD Inter frequency RSRQ measured on all OFDM symbols

A.9.2.36.1 Test Purpose and Environment

The purpose of this test is to verify that the absolute accuracy of RSRQ measurement is within the specified limits when measurement configuration message received by the UE contains *measRSRQ-OnAllSymbols-r12* parameter in TS 36.331 [2]. This test will verify the requirements in Section 9.1.16.

A.9.2.3 is also conducted even if UE is capable of measuring RSRQ on all OFDM symbols.

A.9.2.36.2 Test parameters

In this test case the two cells are on different carrier frequencies and measurement gaps are provided. Both RSRQ measured on all OFDM symbols inter frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.2.36.2-1. In all tests, Cell 1 is the PCell and Cell 2 the target cell.

Table A.9.2.36.2-1: FDD—FDD Inter frequency test parameters

Test 1					
Parameter	Unit	Cell 1	Cell 2		
E-UTRA RF Channel Number		1	2		
BW _{channel}	MHz	10	10		
Gap Pattern Id		0	-		
Antenna Configuration		1x2	1x2		
Time offset between cell 2 and cell 1	μs	3	3		
Measurement bandwidth	n_{PRB}	22-	-27		
PDSCH Reference measurement channel defined in A.3.1.1.1		R.0 FDD	-		
PDSCH allocation	12	13—36	_		
PDCCH/PCFICH/PHICH Reference	n_{PRB}	13—30			
measurement channel defined in A.3.1.2.1		R.6	FDD		
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD) and A.3.2.1.2 (OP.2 FDD)		OP.1 FDD	OP.2 FDD		
PBCH_RA					
PBCH_RB					
PSS_RA	ļ				
SSS_RA	ļ				
PCFICH_RB					
PHICH_RA PHICH RB	-ID	0	0		
PDCCH_RA	dB	0	0		
PDCCH_RB	}				
PDSCH_RA	}				
PDSCH_RB					
OCNG_RA ^{Note1}	1				
OCNG RB ^{Note1}	1				
$N_{oc}^{ m Note2}$	dBm/15 kHz	-80	-80		
\hat{E}_{s}/I_{ot}	dB	-1.75	-1.75		
RSRP ^{Note3}	dBm/15 kHz	-81.75	-81.75		
RSRQ ^{Note3}	dB	-14.76	-14.76		
lo ^{Note3}	dBm/ 9 MHz	-50	-50		
\hat{E}_s/N_{oc}	dBm/ 9 MHz	-1.75	-1.75		
Propagation condition - AWGN					
Note 1: OCNG shall be used such that b					
transmitted power spectral density is achieved for all OFDM symbols. Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as					
AWGN of appropriate power for N_{oc} to be fulfilled. Note 3: RSRP, RSRQ and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. The RSRQ					
values assume RSRI averaging over all OFDM symbols of the subframe. Note 4: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.					

A.9.2.36.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Section 9.1.16.

A.9.2.37 TDD—TDD Inter frequency RSRQ measurement on all OFDM symbols

A.9.2.37.1 Test Purpose and Environment

The purpose of this test is to verify that the absolute accuracy of RSRQ measurement is within the specified limits when measurement configuration message received by the UE contains *measRSRQ-OnAllSymbols-r12* parameter in TS 36.331 [2]. This test will verify the requirements in Section 9.1.16.

A.9.2.4 is also conducted even if UE is capable of measuring RSRQ on all OFDM symbols..

A.9.2.37.2 Test parameters

In this test case the two cells are on different carrier frequencies and measurement gaps are provided. Both RSRQ measured on all OFDM symbols inter frequency absolute and relative accuracy requirements are tested by using test parameters in Table A.9.2.37.2-1. In all tests, Cell 1 is the PCell and Cell 2 the target cell.

Table A.9.2.37.2-1: TDD-TDD Inter frequency test parameters

Parameter	Unit	Test 1			
	Unit	Cell 1	Cell 2		
E-UTRA RF Channel Number		1	2		
BW _{channel}	MHz	10	10		
Special subframe configuration Note1		6	6		
Uplink-downlink configuration Note1		1	1		
Gap Pattern Id		0	-		
Antenna Configuration		1x2	1x2		
Time offset between cell 2 and cell 1	μs	3			
Measurement bandwidth	n_{PRB}	22-	-27		
PDSCH Reference measurement channel defined in A.3.1.1.2		R.0 TDD	-		
PDSCH allocation	n_{PRB}	13—36	-		
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.2		R.6	TDD		
OCNG Patterns defined in A.3.2.2.1 (OP.1 TDD)		OP.1 TDD	OP.2 TDD		
PBCH_RA	ļ				
PBCH_RB	ļ				
PSS_RA	ļ				
SSS_RA	<u> </u>				
PCFICH_RB					
PHICH_RA	I.D.		0		
PHICH_RB	dB	0	0		
PDCCH_RA	-				
PDCCH_RB	<u> </u>				
PDSCH_RA	<u> </u>				
PDSCH_RB OCNG_RA ^{Note1}	1				
OCNG_RA OCNG_RB ^{Note1}	{				
	15 /15				
$N_{oc}^{ m Note2}$	dBm/15 kHz	-80	-80		
\hat{E}_{s}/I_{ot}	dB	-1.75	-1.75		
RSRP ^{Note3}	dBm/15 kHz	-81.75	-81.75		
RSRQ ^{Note3}	dB	-14.76	-14.76		
lo ^{Note3}	dBm/ 9 MHz	-50	-50		
\hat{E}_s/N_{oc}	dBm/ 9 MHz	-1.75	-1.75		
Propagation condition	-	AW	-		
Note 1: For special subframe and uplink 4.2-2 in TS 36.211.	c-downlink co	nfigurations see Ta	bles 4.2-1 and		
Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.					
Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as					
Note 4: RSRP, RSRQ and lo levels hav information purposes. They are	information purposes. They are not settable parameters themselves. The RSRQ				
values assume RSSI averaging over all OFDM symbols of the subframe. Note 5: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.					

A.9.2.37.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Section 9.1.16.

A.9.2.38 3 DL PCell in FDD RSRQ for E-UTRAN in Carrier Aggregation

The test case in this clause is applicable to carrier aggregation capable UEs which have been configured with two downlink SCells.

A.9.2.38.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy in carrier aggregation is within the specified limits under AWGN propagation conditions. This test will verify the absolute accuracy of intra-frequency RSRQ measurements for the primary component carrier specified in clause 9.1.11.1, the absolute accuracy of intra-frequency RSRQ measurements for the secondary component carrier specified in clause 9.1.11.2 and also the relative inter-frequency RSRQ accuracy requirement between primary and secondary component carriers specified in clause 9.1.11.3.

A.9.2.38.2 Test parameters

In this set of test cases there are three cells on three carrier frequencies. Cell 1 is PCell on channel 1, Cell 2 is activated SCell on channel 2, and Cell 3 is activated SCell on channel 3. The parameters for the test are listed in Table A.9.2.38.2-1.

Table A.9.2.38.2-1: 3 DL PCell in FDD RSRQ for E-UTRAN in Carrier Aggregation test parameters (cell #1, cell #2 and cell #3)

Pai	rameter	Unit	Cell 1	Cell 2	Cell 3
E-UTRA RF	Channel Number		1	2	3
BW _{channel}			5MHz: N _{RB,c} = 25 10MHz: N _{RB,c} = 50 20MHz: N _{RB,c} = 100	5MHz: N _{RB,c} = 25 10MHz: N _{RB,c} = 50 20MHz: N _{RB,c} = 100	5MHz: N _{RB,c} = 25 10MHz: N _{RB,c} = 50 20MHz: N _{RB,c} = 100
Special subficonfiguration	Note1		-	6	6
Uplink/downl	link		-	1	1
Measuremer		$n_{{\scriptscriptstyle PRB}}$	5MHz: 10-15 10MHz: 22-27 20MHz: 47-52	5MHz: 10-15 10MHz: 22-27 20MHz: 47-52	5MHz: 10-15 10MHz: 22-27 20MHz: 47-52
PDSCH Refe	erence		5MHz: R.5 FDD	5MHz: R.4 TDD	5MHz: R.4 TDD
measuremer			10MHz: R.0 FDD	10MHz: R.0 TDD	10MHz: R.0 TDD
defined in A.	3.1.1		20MHz: R.4 FDD	20MHz: R.3 TDD	20MHz: R.3 TDD
PDSCH alloc	cation	n_{PRB}	5MHz: 7-17 10MHz: 13-36 20MHz: 38-61	5MHz: 7-17 10MHz: 13-36 20MHz: 38-61	5MHz: 7-17 10MHz: 13-36 20MHz: 38-61
PDCCH/PCF	FICH/PHICH		5MHz: R.11 FDD	5MHz: R.11 TDD	5MHz: R.11 TDD
Reference m			10MHz: R.6 FDD 20MHz: R.10 FDD	10MHz: R.6 TDD 20MHz: R.10 TDD	10MHz: R.6 TDD 20MHz: R.10 TDD
OCNG Patte A.3.2	rns defined in		5MHz: OP.15 FDD 10MHz: OP.1 FDD 20MHz: OP.11 FDD	5MHz: OP.9 TDD 10MHz: OP.1 TDD 20MHz: OP.7 TDD	5MHz: OP.9 TDD 10MHz: OP.1 TDD 20MHz: OP.7 TDD
PBCH_RA					
PBCH_RB					
PSS_RA					
SSS_RA					
PCFICH_RB					
PHICH RA					
PHICH_RB		dB	0	0	0
PDCCH_RA					
PDCCH_RB					
PDSCH_RA					
PDSCH_RB					
OCNG_RANG	ote2				
OCNG_RB ^{NO}	ote2				
	Bands TDD_A		-	-116	-116
	Bands TDD_C		-	-115	-115
	Bands TDD_E		-	-114	-114
	Bands FDD_A		-119.5	-	-
	Bands FDD_B		-119	-	-
N Note3	Bands FDD_C	dBm/	-118.5	-	-
$N_{oc}^{ m Note3}$	Bands FDD_D	15kHz	-118	-	-
	Bands FDD_E, Bands FDD_F Note 6		-117.5	-	-
	Bands FDD_G Bands FDD_H		-116.5 -116	-	-
\hat{E}_s/N_{oc}		dB	-6.0	-6.0	-6.0
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	-6.0	-6.0	-6.0
	Bands TDD_A		-	-122	-122
	Bands TDD_C		-	-121	-121
Note4	Bands TDD_E	dBm/	-	-120	-120
RSRP ^{Note4}	Bands FDD_A	15kHz	-125.5	-	-
	Bands FDD_B	. 51012	-125	-	-
	Bands FDD_C		-124.5	-	-
	Bands FDD_D		-124	-	-

	Bands				
	FDD_E,		400 5		
	Bands FDD_F		-123.5	-	-
	Bands FDD_G		-122.5	-	-
	Bands FDD_H		-122	-	-
	Bands TDD_A				
	Bands TDD_C		-	-17.77	-17.77
	Bands TDD_E				
	Bands FDD_A				
	Bands FDD_B				
Note 4	Bands FDD_C				
RSRQ ^{Note4}	Bands FDD_D	dB			
	Bands		-17.77	_	_
	FDD_E,				
	Bands FDD_F				
	Bands FDD_G				
	Bands FDD_H				
	Bands TDD_A		_	-87.25 +	-87.25 +
	Bando 1BB_71			10log(N _{RB,c} /50)	10log(N _{RB,c} /50)
	Bands TDD_C	dD-c-/	-	-86.25 +	-86.25 +
				10log(N _{RB,d} /50)	10log(N _{RB,c} /50)
	Bands TDD_E		-	-85.25 + 10log(N _{RB,} √50)	-85.25 + 10log(N _{RB,c} /50)
	Bands FDD_A		-90.75 +	_	_
	Danas i DD_it		10log(N _{RB,c} /50)		
	Bands FDD B		-90.25 +	_	-
			10log(N _{RB,o} /50)		
Io ^{Note4}	Bands FDD_C	dBm/	-89.75 +	-	-
		BW _{channel}	10log(N _{RB,} /50) -89.25 +		
	Bands FDD_D		10log(N _{RB,c} /50)	-	-
	Bands				
	FDD_E,		-88.75 +	_	-
	Bands FDD_F		10log(N _{RB,c} /50)		
	Bands FDD_G		-87.75 +	-	-
			10log(N _{RB,c} /50)		
	Bands FDD_H)_H	-87.25 + 10log(N _{RB,c} /50)	-	-
Propagation			AWGN	AWGN	AWGN
Antenna Con			1x2	1x2	1x2
Timing offset		μs	-	0	0
Time alignme	ent error relative		-	≤TAE	≤TAE
to cell 1 Note 10				_ 1715	/ _
to cell 2 Note 10	ent error relative		≤TAE	-	≤TAE
to cell 2					

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be

fulfilled.
RSRP, RSRQ and lo levels have been derived from other parameters for information purposes.
They are not settable parameters themselves.

Note 5: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

Note 6: For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.

Note 7: The selection of the bands for testing depends on the configuration of the carrier aggregation supported by the UEs.

Note 8: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Note 9: E-UTRA operating band groups are as defined in Section 3.5.

Note 4:

Note 10: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends

upon the type of carrier aggregation.

A.9.2.38.3 Test Requirements

In the test, the RSRQ measurement accuracy in carrier aggregation shall fulfil the requirements in clause 9.1.11.1, 9.1.11.2, and 9.1.11.3.

- The absolute accuracy of intra-frequency RSRQ measurements of Cell 1 on the primary component carrier shall fulfil the requirements specified in clause 9.1.11.1.
- The absolute accuracy of intra-frequency RSRQ measurements of Cell 2 on the secondary component carrier shall fulfil the requirements specified in clause 9.1.11.2
- The absolute accuracy of intra-frequency RSRQ measurements of Cell 3 on the secondary component carrier shall fulfil the requirements specified in clause 9.1.11.2
- The relative accuracy of inter-frequency RSRQ measurements between the primary and secondary component carriers for Cell 2 relative to Cell 1 shall fulfil the requirements specified in clause 9.1.11.3.
- The relative accuracy of inter-frequency RSRQ measurements between the primary and secondary component carriers for Cell 3 relative to Cell 1 shall fulfil the requirements specified in clause 9.1.11.3.

A.9.2.39 3 DL PCell in TDD RSRQ for E-UTRAN in Carrier Aggregation

The test case in this clause is applicable to carrier aggregation capable UEs which have been configured with two downlink SCells.

A.9.2.39.1 Test Purpose and Environment

The purpose of this test is to verify that the TDD-FDD RSRQ measurement accuracy in carrier aggregation is within the specified limits under AWGN propagation conditions. This test will verify the absolute accuracy of intra-frequency RSRQ measurements for the primary component carrier defined in Clause 9.1.11.1, the absolute accuracy of intra-frequency RSRQ measurements for the secondary component carrier defined in Clause 9.1.11.2, and also the relative inter-frequency RSRQ accuracy requirement between primary and secondary component carriers defined in Clause 9.1.11.3.

A.9.2.39.2 Test parameters

In this set of cases cell 1 is PCell on the primary component carrier, and cell 2 and cell 3 are activated SCells on secondary component carriers SCC1 and SCC2 respectively. The test parameters for the test are listed in Table A.9.2.39.2-1.

Table A.9.2.39.2-1: 3 Downlink TDD-FDD RSRQ carrier aggregation test parameters with PCell in TDD (cell #1, cell #2 and cell #3)

Pa	rameter	Unit	Cell 1	Cell 2	Cell 3
E-UTRA RF	Channel		1	2	3
BW _{channel}			5MHz: N _{RB,c} = 25 10MHz: N _{RB,c} = 50 20MHz: N _{RB,c} = 100	5MHz: N _{RB,c} = 25 10MHz: N _{RB,c} = 50 20MHz: N _{RB,c} = 100	5MHz: N _{RB,c} = 25 10MHz: N _{RB,c} = 50 20MHz: N _{RB,c} = 100
Special sub configuration	oframe on ^{Note1}		6	-	-
Uplink/dowi	nlink		1	-	-
	ent bandwidth	n_{PRB}	5MHz: 10-15 10MHz: 22-27 20MHz: 47-52	5MHz: 10-15 10MHz: 22-27 20MHz: 47-52	5MHz: 10-15 10MHz: 22-27 20MHz: 47-52
PDSCH Re measurement defined in A A.3.1.1.2			5MHz: R.4 TDD 10MHz: R.0 TDD 20MHz: R.3 TDD	5MHz: R.5 FDD 10MHz: R.0 FDD 20MHz: R.4 FDD	5MHz: R.5 FDD 10MHz: R.0 FDD 20MHz: R.4 FDD
PDSCH allo		n_{PRB}	5MHz: 7-17 10MHz: 13-36 20MHz: 38-61	5MHz: 7-17 10MHz: 13-36 20MHz: 38-61	5MHz: 7-17 10MHz: 13-36 20MHz: 38-61
Reference i	CFICH/PHICH measurement fined in A.3.1.2.1 2.2		5MHz: R.11 TDD 10MHz: R.6 TDD 20MHz: R.10 TDD	5MHz: R.11 FDD 10MHz: R.6 FDD 20MHz: R.10 FDD	5MHz: R.11 FDD 10MHz: R.6 FDD 20MHz: R.10 FDD
OCNG Patt A.3.2.1 and	erns defined in A.3.2.2		5MHz: OP.9 TDD 10MHz: OP.1 TDD 20MHz: OP.7 TDD	5MHz: OP.15 FDD 10MHz: OP.1 FDD 20MHz: OP.11 FDD	5MHz: OP.15 FDD 10MHz: OP.1 FDD 20MHz: OP.11 FDD
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_R PHICH_RA PHICH_RB PDCCH_RI PDCCH_RI PDSCH_RI PDSCH_RA OCNG_RA OCNG_RB	A B A S Note2	dB	0	0	0
	Bands TDD_A		-119.5	-	-
	Bands TDD_C		-118.5	-	-
	Bands TDD_E Bands FDD_A		-117.5 -	- -116	- -116
	Bands FDD_B		-	-115.5	-115.5
$N_{oc}^{ m \ Note3}$	Bands FDD_C	dBm/	-	-115	-115
TV oc	Bands FDD_D	15kHz	-	-114.5	-114.5
	Bands FDD_E, Bands FDD_F		-	-114	-114
	Bands FDD_G Bands FDD_H		-	-113 -112.5	-113 -112.5
\hat{E}_s/N_{oc}		dB	-6.0	-6.0	-6.0
$\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$		dB	-6.0	-6.00	-6.00
	Bands TDD_A Bands TDD_C		-125.50 -124.50	-	-
DOD DNote4	Bands TDD_E	dBm/	-123.50	-	-
RSRP ^{Note4}	Bands FDD_A	15kHz	-	-122	-122
	Bands FDD_B Bands FDD_C		-	-121.5 -121	-121.5 -121
	Bands FDD_D		-	-120.5	-120.5
			i		<u> </u>

	Bands FDD_E, Bands FDD_F Note 6		-	-120	-120
	Bands FDD_G		-	-119	-119
	Bands FDD_H		-	-118.5	-118.5
	Bands TDD_A				
	Bands TDD C		-17.77	-	_
	Bands TDD_E				
	Bands FDD_A				
	Bands FDD_B				
Note4	Bands FDD_C				
RSRQ ^{Note4}	Bands FDD_D	dB			
	Bands FDD_E,		-	-17.77	-17.77
	Bands FDD_F Note 6				
	Bands FDD_G				
	Bands FDD_H				
	_		-90.75 +		
	Bands TDD_A		10log(N _{RB,c} /50)	-	-
	5	dBm/ BW _{channel}	-89.75 +		
	Bands TDD_C		10log(N _{RB,o} /50)	-	-
	D TDD E		-88.75 +		
	Bands TDD_E		10log(N _{RB,c} /50)	-	-
	Danda EDD A		3 ,,	-87.25 +	-87.25 +
	Bands FDD_A		-	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)
	Dondo EDD D			-86.75 +	-86.75 +
	Bands FDD_B		-	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)
Io ^{Note4}	Bondo EDD C		-	-86.25 +	-86.25 +
	Bands FDD_C			10log(N _{RB,c} /50)	10log(N _{RB,c} /50)
	Bands FDD_D		-	-85.75 +	-85.75 +
	Ballus PDD_D			10log(N _{RB,c} /50)	10log(N _{RB,o} /50)
	Bands FDD_E,			-85.25 +	-85.25 +
	Bands FDD_F		-	10log(N _{RB,o} /50)	10log(N _{RB,c} /50)
	Note 6				
	Bands FDD_G		_	-84.25 +	-84.25 +
	Danus i DD_G]	-	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)
	Bands FDD_H		_	-83.75 +	-83.75 +
			-	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)
Propagation			AWGN	AWGN	AWGN
Antenna Co			1x2	1x2	1x2
Timing offse		μs		0	0
Time alignm to cell 1 Note	ent error relative		-	≤TAE	≤TAE
Time alignm	ent error relative		≤TAE	_	≤TAE
to cell 2 Note	10		2 IAL		2 IAL

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be

fulfilled.
RSRP, RSRQ and lo levels have been derived from other parameters for information purposes.

They are not settable parameters themselves.

Note 5: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

Note 6: For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.

Note 7: The selection of the bands for testing depends on the configuration of the carrier aggregation supported by the UEs.

Note 8: This test verifies the RRM requirement which is independent of channel bandwidth and is performed according to the principle defined in section A.3.6.1.

Note 9: E-UTRA operating band groups are as defined in Section 3.5.

Note 4:

Note 10: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.

A.9.2.39.3 Test Requirements

In the test, the RSRQ measurement accuracy in carrier aggregation shall fulfil the requirements in clause 9.1.11.1, 9.1.11.2, and 9.1.11.3.

- The absolute accuracy of intra-frequency RSRQ measurements of Cell 1 on the primary component carrier shall fulfil the requirements specified in clause 9.1.11.1.
- The absolute accuracy of intra-frequency RSRQ measurements of Cell 2 on the secondary component carrier shall fulfil the requirements specified in clause 9.1.11.2
- The absolute accuracy of intra-frequency RSRQ measurements of Cell 3 on the secondary component carrier shall fulfil the requirements specified in clause 9.1.11.2
- The relative accuracy of inter-frequency RSRQ measurements between the primary and secondary component carriers for Cell 2 relative to Cell 1 shall fulfil the requirements specified in clause 9.1.11.3.
- The relative accuracy of inter-frequency RSRQ measurements between the primary and secondary component carriers for Cell 3 relative to Cell 1 shall fulfil the requirements specified in clause 9.1.11.3.

A.9.2.40 3 DL FDD RSRQ for E-UTRAN in Carrier Aggregation

A.9.2.40.1 Test Purpose and Environment

The purpose of this test is to verify that the FDD RSRQ measurement accuracy in carrier aggregation is within the specified limits under AWGN propagation conditions. This test will verify the absolute accuracy of intra-frequency RSRQ measurements for the primary component carrier specified in clause 9.1.11.1, the absolute accuracy of intra-frequency RSRQ measurements for the secondary component carriers specified in clause 9.1.11.2 and also the relative inter-frequency RSRQ accuracy requirement between primary and secondary component carriers specified in clause 9.1.11.3.

A.9.2.40.2 Test parameters

In this test case the PCell and the SCells are on different carrier frequencies. There are three cells used in this test case. Both RSRQ absolute and relative accuracy requirements of the primary and secondary component carriers are tested by using test parameters specified in Table A.9.2.40.2-1. In the test, Cell 1 is the PCell, Cell 2 and Cell 3 are the SCells on secondary component carrier SCC1 and SCC2 respectively. The SCC1 and SCC2 are configured and activated.

Table A.9.2.40.2-1: 3 DL FDD RSRQ carrier aggregation test parameters

	rameter	Unit	Cell 1	Cell 2	Cell 3
E-UTRA RF C	nannel Number		1	2	3
BWchannel		MHz	$5MHz:N_{RB,c} = 25$ $10MHz:N_{RB,c} = 50$	5MHz: N _{RB,c} = 25 10MHz: N _{RB,c} = 50	$5MHz: N_{RB,c} = 25$ $10MHz: N_{RB,c} = 50$
		IVII IZ	$20MHz:N_{RB,c} = 100$	$20MHz: N_{RB,c} = 100$	20MHz: N _{RB,c} = 100
			5MHz:10-15	5MHz: 10-15	5MHz: 10-15
Measurement I	bandwidth	n_{PRB}	10MHz:22-27	10MHz: 22-27	10MHz: 22-27
		FKB	20MHz:47-52	20MHz: 47-52	20MHz: 47-52
PDSCH Refere	ence measurement		5MHz:R.5 FDD	5MHz:R.5 FDD	5MHz:R.5 FDD
channel define			10MHz:R.0 FDD	10MHz:R.0 FDD	10MHz:R.0 FDD
onarmor domio	G 1117 11.01 11.111		20MHz:R.4 FDD	20MHz:R.4 FDD	20MHz:R.4 FDD
DDCCH alleged	tion	**	5MHz:7-17	5MHz:7-17	5MHz:7-17
PDSCH allocat	lion	$n_{{\scriptscriptstyle PRB}}$	10MHz:13-36 20MHz:38-61	10MHz:13-36 20MHz:38-61	10MHz:13-36 20MHz:38-61
PDCCH/PCFIC	CH/PHICH		5MHz:R.11 FDD	5MHz:R.11 FDD	5MHz:R.11 FDD
	asurement channel		10MHz:R.6 FDD	10MHz:R.6 FDD	10MHz:R.6 FDD
defined in A.3.			20MHz:R.10 FDD	20MHz:R.10 FDD	20MHz:R.10 FDD
			5MHz:OP.15 FDD	5MHz:OP.15 FDD	5MHz:OP.15 FDD
OCNG Pattern A.3.2.1	s defined in		10MHz:OP.1 FDD	10MHz:OP.1 FDD	10MHz:OP.1 FDD
A.3.2.1			20MHz:OP.11 FDD	20MHz:OP.11 FDD	20MHz:OP.11 FDD
PBCH_RA					
PBCH_RB					
PSS_RA					
SSS_RA					
PCFICH_RB					
PHICH_RA					
PHICH_RB		dB	0	0	0
PDCCH_RA			·		· ·
PDCCH_RB					
PDSCH_RA					
_					
OCNG_RA ^{Note1}	PDSCH_RB				
OCNG_RA					
OCNG_RB	_		440.5	440	440
	Bands FDD_A Bands FDD_B		-119.5 -119	-116 -115.5	-116 -115.5
	Bands FDD_B Bands FDD_C		-118.5	-115.5	-115.5
Note?	Bands FDD_C	dBm/15	-118	-114.5	-114.5
$N_{oc}^{ m Note2}$	Bands FDD E.	kHz			
	FDD_F Note 6		-117.5	-114	-114
	Bands FDD_G		-116.5	-113	-113
	Bands FDD_H		-116	-112.5	-112.5
\hat{E}_s/N_{oc}		dB	-6.0	-6.0	-6.0
s / OC					
$\hat{E}_{_{s}}/I_{_{ot}}$ Note3		dB	-6.0	-6.0	-6.0
	Bands FDD_A		-125.5	-122	-122
	Bands FDD_B		-125	-121.5	-121.5
	Bands FDD_C		-124.5	-121	-121
RSRP ^{Note3}	Bands FDD_D	dBm/15	-124	-120.5	-120.5
	Bands FDD_E, FDD_F Note 6	kHz	-123.5	-120	-120
	Bands FDD_G		-122.5	-119	-119
	Bands FDD_H		-122	-118.5	-118.5
	Bands FDD_A				
	Bands FDD_B				
	Bands FDD_C				
RSRQ ^{Note3}	Bands FDD_D Bands FDD_E,	dB	-17.77	-17.77	-17.77
	FDD_F Note 6				
	Bands FDD_G				
	Bands FDD_H				
Io ^{Note3}	Bands FDD_A	dBm/	-90.75+	-87.25+	-87.25+
	-	•	•	•	

	BW _{channel}	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)
Bands FD	D B	-90.25+	-86.75+	-86.75+
Ballus FD	∪_В	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)
Bands FD	D C	-89.75+	-86.25+	-86.25+
Ballus FD	D_C	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)
Bands FD	חח	-89.25+	-85.75+	-85.75+
Ballus FD	0_0	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)
Bands FD	D_E,	-88.75+	-85.25+	-85.25+
FDD_F Not	e 6	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)
Bands FD	D G	-87.75+	-84.25+	-84.25+
Ballus FD	D_G	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)
Bands FD	пн	-87.25+	-83.75+	-83.75+
Ballds I B	U_II	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)
Propagation condition	-	AWGN	AWGN	AWGN
Antenna Configuration	-	1x2	1x2	1x2
Timing offset to Cell 1	μs	-	0	0
Time alignment error relativ	re to		≤TAE	≤ TAE
cell 1 Note 7		-	≥ IAE	≥ IAE
Time alignment error relativ	re to	_	_	≤ TAE
cell 2 Note /		-	-	≥ IAE

- Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.
- Note 3: Es/lot, RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 4: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
- Note 5: The selection of the bands for testing depends on the configuration of the carrier aggregation supported by the UFs.
- Note 6: For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.
- Note 7: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.
- Note 8: E-UTRA operating band groups are as defined in Section 3.5.

A.9.2.40.3 Test Requirements

In the test, the RSRQ measurement accuracy in carrier aggregation shall fulfil the requirements in clause 9.1.11.1, 9.1.11.2, and 9.1.11.3.

- The absolute accuracy of intra-frequency RSRQ measurements of Cell 1 on the primary component carrier shall fulfil the requirements defined in clause 9.1.11.1.
- The absolute accuracy of intra-frequency RSRQ measurements of Cell 2 on SCC1 shall fulfil the requirements defined in clause 9.1.11.2.
- The absolute accuracy of intra-frequency RSRQ measurements of Cell 3 on SCC2 shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of inter-frequency RSRQ measurements between the primary component carrier and SCC1 for Cell 2 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.11.3.
- The relative accuracy of inter-frequency RSRQ measurements between the primary component carrier and SCC2 for Cell 3 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.11.3.

A.9.2.41 3 DL TDD RSRQ for E-UTRAN in Carrier Aggregation

A.9.2.41.1 Test Purpose and Environment

The purpose of this test is to verify that the TDD RSRQ measurement accuracy in carrier aggregation is within the specified limits in a synchronized network environment with AWGN propagation conditions. This test will verify the absolute accuracy of intra-frequency RSRQ measurements for the primary component carrier defined in

Clause 9.1.11.1, the absolute accuracy of intra-frequency RSRQ measurements for the secondary component carriers defined in Clause 9.1.11.2, and also the relative inter-frequency RSRQ accuracy requirement between primary and secondary component carriers defined in Clause 9.1.11.3.

A.9.2.41.2 Test parameters

In the test there are three synchronous cells: Cell 1, Cell 2 and Cell 3. Cell 1 is PCell, Cell 2 and Cell 3 are the SCells on secondary component carrier SCC1 and SCC2 respectively. PCell and SCells are in different RF channels. The parameters for the test are listed in Table A.9.2.41.2-1.

Table A.9.2.41.2-1: 3 DL TDD RSRQ carrier aggregation test parameters

	ameter	Unit	Cell 1	Cell2	Cell3
E-UTRA RF Ch	annel Number		1	2	3
BW _{channel}		MHz	5MHz: $N_{RB,c} = 25$ 10MHz: $N_{RB,c} = 50$ 20MHz: $N_{RB,c} = 100$	5MHz: $N_{RB,c} = 25$ 10MHz: $N_{RB,c} = 50$ 20MHz: $N_{RB,c} = 100$	5MHz: $N_{RB,c} = 25$ 10MHz: $N_{RB,c} = 50$ 20MHz: $N_{RB,c} = 100$
Special subfranconfiguration Not	ne e1		6		
Uplink-downlink	configuration Note1			1	
Measurement b		$n_{{\scriptscriptstyle PRB}}$	5MHz: 10-15 10MHz: 22-27 20MHz: 47-52	5MHz: 10-15 10MHz: 22-27 20MHz: 47-52	5MHz: 10-15 10MHz: 22-27 20MHz: 47-52
PDSCH Refere	nce measurement d in A.3.1.1.1		5MHz: R.4 TDD 10MHz: R.0 TDD 20MHz: R.3 TDD	5MHz: R.4 TDD 10MHz: R.0 TDD 20MHz: R.3 TDD	5MHz: R.4 TDD 10MHz: R.0 TDD 20MHz: R.3 TDD
PDSCH allocati	ion	n_{PRB}	5MHz: 7-17 10MHz: 13-36 20MHz: 38-61	5MHz: 7-17 10MHz: 13-36 20MHz: 38-61	5MHz: 7-17 10MHz: 13-36 20MHz: 38-61
PDCCH/PCFIC			5MHz: R.11 TDD	5MHz:R.11 TDD	5MHz:R.11 TDD
	surement channel		10MHz: R.6 TDD	10MHz:R.6 TDD	10MHz:R.6 TDD
defined in A.3.1	1.2.1		20MHz: R.10 TDD 5MHz: OP.9 TDD	20MHz:R.10 TDD 5MHz: OP.9 TDD	20MHz:R.10 TDD 5MHz: OP.9 TDD
OCNG Patterns A.3.2.1	s defined in		10MHz: OP.1 TDD 20MHz: OP.7 TDD	10MHz: OP.1 TDD 20MHz: OP.7 TDD	10MHz: OP.1 TDD 20MHz: OP.7 TDD
PBCH_RA			20111121 01 11 122	20111121 01 11 122	20111121 01 17 188
PBCH_RB					
PSS_RA					
SSS_RA					
PCFICH_RB					
PHICH_RA					
PHICH_RB		dB	0	0	0
PDCCH_RA					
PDCCH_RB					
PDSCH_RA					
PDSCH_RB					
OCNG_RA ^{Note2}					
OCNG_RB ^{Note2}	_				
a.z. Note3	Bands TDD_A	dBm/15	-119.5	-116	-116
$N_{oc}^{ m Note3}$	Bands TDD_C Bands TDD_E	kHz	-118.5 -117.5	-115 -114	-115 -114
\hat{E}_s/N_{oc}	Ballus IDD_E	dB	-6.0	-6.0	-6.0
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}^{\mathrm{Note4}}$		dB	-6.0	-6.0	-6.0
Note/	Bands TDD_A	dBm/15	-125.5	-122	-122
RSRP ^{Note4}	Bands TDD_C	kHz	-124.5	-121	-121 120
	Bands TDD_E		-123.5	-120	-120
RSRQ ^{Note4}	Bands TDD_A, TDD_C, TDD_E	dB	-17.77	-17.77	-17.77
	Bands TDD_A		-90.75+ 10log(N _{RB,c} /50)	-87.25+ 10log(N _{RB,c} /50)	-87.25+ 10log(N _{RB,c} /50)
	Bands TDD_C		-89.75+	-86.25+	-86.25+
Io ^{Note4}	Dallus IDD_C	dBm/	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)	10log(N _{RB,c} /50)
	Bands TDD_E	BW _{channel}	-88.75+ 10log(N _{RB,c} /50)	-85.25+ 10log(N _{RB,c} /50)	-85.25+ 10log(N _{RB,c} /50)
Propagation co	ndition	-	AWGN	AWGN	AWGN
Antenna Config		-	1x2	1x2	1x2

Timing offset to Cell 1	μs	-	0	0
Time alignment error relative to cell 1 Note 7		-	≤ TAE	≤TAE
Time alignment error relative to cell 2 Note 7		-	-	≤ TAE

- Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.
- Note 2: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.
- Note 4: Es/lot, RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 5: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.
- Note 6: The selection of the bands for testing depends on the configuration of the carrier aggregation supported by the UEs.
- Note 7: Time alignment error (TAE) as specified in TS 36.104 [30] clause 6.5.3.1. The TAE value depends upon the type of carrier aggregation.
- Note 8: E-UTRA operating band groups are as defined in Section 3.5.

A.9.2.41.3 Test Requirements

In the test, the RSRQ measurement accuracy in carrier aggregation shall fulfil the requirements in section 9.1.11.1, 9.1.11.2, and 9.1.11.3.

- The absolute accuracy of intra-frequency RSRQ measurements of Cell 1 on the primary component carrier shall fulfil the requirements defined in clause 9.1.11.1.
- The absolute accuracy of intra-frequency RSRQ measurements of Cell 2 on SCC1 shall fulfil the requirements defined in clause 9.1.11.2.
- The absolute accuracy of intra-frequency RSRQ measurements of Cell 3 on SCC2 shall fulfil the requirements defined in clause 9.1.11.2.
- The relative accuracy of inter-frequency RSRQ measurements between the primary component carrier and SCC1 for Cell 2 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.11.3.
- The relative accuracy of inter-frequency RSRQ measurements between the primary component carrier and SCC2 for Cell 3 relative to Cell 1 shall fulfil the requirements defined in clause 9.1.11.3.

A.9.2.42 FD-FDD RSRQ Intra frequency case for UE category 0

A.9.2.42.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Clause 9.1.13.3 for FD-FDD intra frequency RSRQ measurements for UE category 0.

A.9.2.42.2 Test parameters

In this test case all cells are on the same carrier frequency. The absolute accuracy of RSRQ intra frequency measurement is tested by using the parameters in Table A.9.2.42.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell.

Table A.9.2.42.2-1: FD-FDD RSRQ Intra frequency test parameters for UE category 0

		1124	Tes	st 1	Tes	st 2	Tes	st 3
	rameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
	hannel Number	MHz	,					
BW _{channel}	BW _{channel}		10		10		10	
Measurement	bandwidth	$n_{\it PRB}$	22-	–27	22—27		22—27	
PDSCH Reference channel define	ence measurement d in A.3.1.1.3		R.13 FDD	-	R.13 FDD	-	R.13 FDD	-
PDSCH alloca	tion	$n_{\it PRB}$	13—36	-	13—36	-	13—36	-
PDCCH/PCFIC								
Reference meadefined in A.3.	asurement channel		R.6	FDD	R.6	FDD	R.6	FDD
OCNG Pattern								
A.3.2.1.1 (OP.	1 FDD) and		OP.1 FDD	OP.2 FDD	OP.1 FDD	OP.2 FDD	OP.1 FDD	OP.2 FDD
A.3.2.1.2 (OP.:	2 FDD)		100	100	100	100	100	100
PBCH_RA PBCH_RB								
PSS_RA								
SSS_RA								
PCFICH_RB								
PHICH_RA			_	_	_	_	_	_
PHICH_RB		dB	0	0	0	0	0	0
PDCCH_RA PDCCH_RB								
PDSCH_RA								
PDSCH_RB								
OCNG_RA ^{Note}								
OCNG_RB ^{Note}								
	Bands FDD_A Bands FDD_B		-84.76				-1	16 5.5
	Bands FDD_B Bands FDD_C				-103.85		-11 -1	
Note2	Bands FDD_D							4.5
$N_{oc}^{ m Note2}$	Bands FDD_E, FDD F Note 5	dBm/15 kHz					-1	14
	Bands FDD_G						-1	13
	Bands FDD_H						-112.5	
\hat{E}_s/N_{oc}		dB	3	3	-2.9	-2.9	-4	-4
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	-1.76	-1.76	-4.7	-4.7	-5.46	-5.46
	Bands FDD_A						-120	-120
	Bands FDD_B						-119.5	-119.5
	Bands FDD_C					-106.75	-119 -118.5	-119 -118.5
RSRP ^{Note3}	Bands FDD_D Bands FDD_E,	dBm/15 kHz	-81.76	-81.76	-106.75			
	FDD_F Note 4 Bands FDD_G						-118	-118
	Note 6						-117	-117
	Bands FDD_H						-116.5	-116.5
	Bands FDD_A Bands FDD_B							
	Bands FDD_B Bands FDD_C							
	Bands FDD_D							
RSRQ ^{Note3}	Bands FDD_E, FDD_F Note 45	dB	-14.77	-14.77	-16.76	-16.76	-17.34	-17.34
	Bands FDD_G							
	Bands FDD_H							
	Bands FDD_A			I		1	-85	.67
	Bands FDD_B						-85	
Io ^{Note3}	Bands FDD_C	dBm/9 MHz	-5	50	-73			.67
	Bands FDD_D							.17
	Bands FDD_E,						-83	5.67

	FDD_F Note 4				
	Bands FDD_G Note 6				-82.67
	Bands FDD_H				-82.17
Propagation co	ndition	-	AWGN	AWGN	AWGN
Correlation Mat	rix and Antenna		1x1	1x1	1x1

- Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.
- Note 3: Es/lot, RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 4: For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.
- Note 5: E-UTRA operating band groups are as defined in Section 3.5.
- Note 6: Except Band 29 and Band 32.

A.9.2.42.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Clause 9.1.13.3.

A.9.2.43 HD-FDD RSRQ Intra frequency case for UE category 0

A.9.2.43.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Clause 9.1.13.3 for HD-FDD intra frequency RSRQ measurements for UE category 0.

A.9.2.43.2 Test parameters

In this test case all cells are on the same carrier frequency. The absolute accuracy of RSRQ intra frequency measurement is tested by using the parameters in Table A.9.2.43.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell.

Table A.9.2.43.2-1: HD-FDD RSRQ Intra frequency test parameters for UE category 0

_			Tes	st 1	Tes	st 2	Tes	st 3
Pa	rameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF C	hannel Number			1		1		1
BW _{channel}		MHz	10		10		10	
Measurement	h an dwidth			–27		–27		–27
		$n_{\it PRB}$	22-	-21	22-	-21	22-	-21
	ence measurement		R.1 HD-	-	R.1 HD-	_	R.1 HD-	-
channel define	d in A.3.1.1.4		FDD		FDD		FDD	
PDSCH alloca	tion	$n_{\it PRB}$	13—36	-	13—36	-	13—36	-
PDCCH/PCFIC	CH/PHICH							
Reference mea	asurement channel		R.3 HI	D-FDD	R.3 HI	D-FDD	R.3 HI	D-FDD
defined in A.3.								1
OCNG Pattern			OP.1	OP.2	OP.1	OP.2	OP.1	OP.2
A.3.2.1.1 (OP.			FDD	FDD	FDD	FDD	FDD	FDD
A.3.2.1.2 (OP.:	2 FDD)							
PBCH_RA								
PBCH_RB								
PSS_RA								
SSS_RA PCFICH_RB								
PHICH_RA								
PHICH_RB		dB	0	0	0	0	0	0
PDCCH_RA		ub						
PDCCH_RB								
PDSCH_RA								
PDSCH_RB								
OCNG_RA ^{Note}	1							
OCNG_RB ^{Note}	1							
_	Bands FDD_A						-1	16
	Bands FDD_B						-11	5.5
	Bands FDD_C							15
λ/ Note2	Bands FDD_D						-11	4.5
$N_{oc}^{ m Note2}$	Bands FDD_E,	dBm/15 kHz	-84	.76	-103	3.85	_1	14
	FDD_F Note 4						'	17
	Bands FDD_G						-1	13
								0.5
A /	Bands FDD_H						-11	2.5
\hat{E}_s/N_{oc}		dB	3	3	-2.9	-2.9	-4	-4
\hat{E}_{s}/I_{ot}		dB	-1.76	-1.76	-4.7	-4.7	-5.46	-5.46
L _s /I _{ot}		иь	-1.70	-1.70	-4.7	-4.7		
	Bands FDD_A						-120	-120
	Bands FDD_B						-119.5	-119.5
	Bands FDD_C						-119	-119
RSRP ^{Note3}	Bands FDD_D	dBm/15 kHz	-81.76	-81.76	-106.75	-106.75	-118.5	-118.5
NONE	Bands FDD_E, FDD_F Note 4	UDIII/ 13 KMZ	-01./0	-81./6	-100.75	-100.75	-118	-118
	Bands FDD_G							
	Note 6						-117	-117
	Bands FDD_H						-116.5	-116.5
	Bands FDD_A							
	Bands FDD_B							
	Bands FDD_C							
	Bands FDD_D							
RSRQ ^{Note3}	Bands FDD E.	dB	-14.77	-14.77	-16.76	-16.76	-17.34	-17.34
	FDD_F Note 4							
	Bands FDD_G							
	Note 6							
	Bands FDD_H							
	Bands FDD_A							.67
. Note3	Bands FDD_B							.17
Io ^{Note3}	Bands FDD_C	dBm/9 MHz	-5	50	-7	' 3		.67
	Bands FDD_D							.17
	Bands FDD_E,						-83	.67

	FDD_F Note 4				
	Bands FDD_G Note 6				-82.67
	Bands FDD_H				-82.17
Propagation co	ndition	-	AWGN	AWGN	AWGN
Correlation Mat	rix and Antenna		1x1	1x1	1x1

- Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.
- Note 3: Es/lot, RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 4: For Band 26, the tests shall be performed with the carrier frequency of the assigned E-UTRA channel bandwidth within 865-894 MHz.
- Note 5: E-UTRA operating band groups are as defined in Section 3.5.
- Note 6: Except Band 29 and Band 32

A.9.2.43.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Clause 9.1.13.3.

A.9.2.44 TDD RSRQ Intra frequency case for UE category 0

A.9.2.44.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRQ measurement accuracy is within the specified limits. This test will verify the requirements in Clause 9.1.13.3 for TDD intra frequency RSRQ measurements for UE category 0.

A.9.2.44.2 Test parameters

In this test case all cells are on the same carrier frequency. The absolute accuracy of RSRQ intra frequency measurement is tested by using the parameters in Table A.9.2.44.2-1. In all test cases, Cell 1 is the PCell and Cell 2 the target cell.

Table A.9.2.44.2-1: TDD RSRQ Intra frequency test parameters for UE category 0

Danis at an		l lmit	Test 1		Test 2		Test 3	
	rameter	Unit	Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
E-UTRA RF Ch	nannel Number		,		,			1
BW _{channel}		MHz	1	0	1	0	10	
Special subfrar configuration No	te1		(6	(6	6	
Uplink-downlinl	k configuration Note1		,	1	,	1	,	1
Measurement b	oandwidth	$n_{{\scriptscriptstyle PRB}}$		–27	22–	–27	22-	–27
PDSCH Refere	ence measurement d in A.3.1.1.5		R.12 TDD	-	R.12 TDD	-	R.12 TDD	-
PDSCH allocat	ion	n_{PRB}	13—36	-	13—36	-	13—36	-
PDCCH/PCFIC Reference mea defined in A.3.1	surement channel		R.6	TDD	R.6	TDD	R.6	TDD
OCNG Patterns A.3.2.2.1 (OP.1 A.3.2.2.2 (OP.2	I TDD) and		OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD	OP.1 TDD	OP.2 TDD
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RA OCNG_RA OCNG_RB		dB	0	0	0	0	0	0
$N_{oc}^{ m Note3}$	Bands TDD_C Bands TDD_E	dBm/15 kHz	-84.76		-103.85		-115 -114	
\hat{E}_s/N_{oc}	ם במוועס דטט_ב	dB	3	3	-2.9	-2.9	-4	-4
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	-1.76	-1.76	-4.7	-4.7	-5.46	-5.46
RSRP ^{Note4}	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/15 kHz	-81.76	-81.76	-106.75	-106.75	-120 -119 -118	-120 -119 -118
RSRQ ^{Note4}	Bands TDD_A, TDD_C, TDD_E	dB	-14.77	-14.77	-16.76	-16.76	-17.34	-17.34
lo ^{Note4}	Bands TDD_A Bands TDD_C Bands TDD_E	dBm/9 MHz		50		73	-84 -83	.67 .67
Propagation co		-	AW	'GN	AW	'GN	AW	'GN
Correlation Mar Configuration	trix and Antenna		1)	k 1		κ1	1:	x1

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 4: RSRQ, RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: RSRP and RSRQ minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

Note 6: E-UTRA operating band groups are as defined in Section 3.5.

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

A.9.2.44.3 Test Requirements

The RSRQ measurement accuracy shall fulfil the requirements in Clause 9.1.13.3.

A.9.3 UTRAN FDD CPICH RSCP

A.9.3.1 E-UTRAN FDD

A.9.3.1.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH RSCP absolute measurement accuracy is within the specified limits. This test will verify the requirements in Clause 9.2.1. There are two different test setups with different UTRAN parameters.

A.9.3.1.2 Parameters

The test parameters are given in Tables A.9.3.1.2-1, A.9.3.1.2-2 and A.9.3.1.2-3 below.

Table A.9.3.1.2-1: General test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN FDD

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.3.1.2.1
E-UTRAN RF Channel Number		1	One E-UTRAN FDD carrier frequency is used.
UTRAN RF Channel Number		1	One UTRAN FDD carrier frequency is used.
E-UTRAN Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	E-UTRAN cell 1 on RF channel number 1
Neighbor cells		Cell 2	UTRAN cell 2 on RF channel number 1
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Inter-RAT (UTRAN FDD) measurement quantity		CPICH RSCP	
Monitored UTRA FDD cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell list.
CP length		Normal	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF

Table A.9.3.1.2-2: E-UTRAN FDD cell specific test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN FDD

Parameter	Unit	Test 1	Test 2		
E-UTRAN RF Channel Number		1			
BW _{channel}	W _{channel} MHz		10		
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD)		OP.1	FDD		

0
-98
-94
4
-94
4
_

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modeled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.9.3.1.2-3: UTRAN FDD cell specific test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN FDD

	Parameter	Unit	Test 1	Test 2
			Cell 2	Cell 2
	CPICH_Ec/lor	dB	-10	-10
	PCCPCH_Ec/lor	dB	-12	-12
	SCH_Ec/lor	dB	-12	-12
	PICH_Ec/lor	dB	-15	-15
	DPCH_Ec/lor	dB	-	-
	OCNS_Ec/lor	dB	-0.94	-0.94
loc	Band I, IV, VI, X, XI, XIX,	dBm/3.84		-94.46
	XXI	MHz		
	Band II, V, VII			-92.46
	Band XXV, XXVI		-60.00	-90.96 (Note 3)
	Band III, VIII, XII, XIII, XIV,			-91.46
	XX, XXII			
	Band IX (Note 2)			-93.46
	Îor/loc		9.54	-9.54
CPICH	Band I, IV, VI, X, XI, XIX,	dBm		-114.0
RSCP,	XXI			
Note 1	Band II, V, VII			-112.0
	Band XXV, XXVI		-60.46	-110.5 (Note 3)
	Band III, VIII, XII, XIII, XIV,			-111.0
	XX, XXII			
	Band IX (Note 2)			-113.0
Io, Note 1	Band I, IV, VI, X, XI, XIX,	dBm/3.84		-94.0
	XXI	MHz		
	Band II, V, VII			-92.0
	Band XXV, XXVI		-50.00	-90.5 (Note 3)
	Band III, VIII, XII, XIII, XIV,			-91.0
	XX, XXII			
	Band IX (Note 2)			-93.0
Pro	opagation condition	-	AWGN	AWGN

NOTE 1: CPICH RSCP and lo levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.

NOTE 2: For the UE which supports both Band III and Band IX operating frequencies, the measurement performance requirements for Band III shall apply to the multi-band UE.

NOTE 3: The test parameter is modified by -1.5 dB when the carrier frequency of the assigned UTRA channel is within 869-894 MHz for the UE which supports both Band V and Band XXVI operating frequencies.

Tests shall be done sequentially. Test 1 shall be done first. After test 1 has been executed test parameters for test 2 shall be set within 5 seconds so that UE does not loose the Cell 2 in between the tests.

A.9.3.1.3 Test Requirements

The CPICH RSCP measurement absolute accuracy shall meet the requirements in Clause 9.2.1.

A.9.3.2 E-UTRAN TDD

A.9.3.2.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH RSCP absolute measurement accuracy is within the specified limits. This test will verify the requirements in Clause 9.2.1. There are three different test setups with different UTRAN parameters.

A.9.3.2.2 Parameters

The test parameters are given in Tables A.9.3.2.2-1, A.9.3.2.2-2 and A.9.3.2.2-3 below.

Table A.9.3.2.2-1: General test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN TDD

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
E-UTRAN RF Channel Number		1	One E-UTRAN TDD carrier frequency is used.
UTRAN RF Channel Number		1	One UTRAN FDD carrier frequency is used.
E-UTRAN Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	E-UTRAN cell 1 on RF channel number 1
Neighbor cells		Cell 2	UTRAN cell 2 on RF channel number 1
Gap Pattern Id		1	As specified in TS 36.133 clause 8.1.2.1.
Inter-RAT (UTRAN FDD) measurement quantity		CPICH RSCP	
Monitored UTRA FDD cell		12	UTRA cells on UTRA RF channel 1
list size			provided in the cell list.
CP length		Normal	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF

Table A.9.3.2.2-2: E-UTRAN TDD cell specific test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN TDD

Parameter	Unit	Test 1	Test 2
E-UTRAN RF Channel Number		1	
BW _{channel}	MHz	10	
Special subframe configuration ^{Note1} Uplink-downlink configuration ^{Note1}		6	
Uplink-downlink configuration Note1		1	
OCNG Patterns defined in A.3.2.2.1		OP.1 TI)D
(OP.1 TDD)		01.111	ענ

PBCH_RA	dB	
PBCH_RB	dB	
PSS_RA	dB	
SSS_RA	dB	
PCFICH_RB	dB	
PHICH_RA	dB	
PHICH_RB	dB	0
PDCCH_RA	dB	
PDCCH_RB	dB	
PDSCH_RA	dB	
PDSCH_RB	dB	
OCNG_RA ^{Note 2}	dB	
OCNG_RB ^{Note 2}	dB	
$N_{oc}^{ m Note~3}$	dBm/15 kHz	-98
RSRP Note 4	dBm/15 kHz	-94
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4
SCH_RP Note 4	dBm/15 kHz	-94
\hat{E}_s/N_{oc}	dB	4

Propagation Condition AWGN

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

- Note 2: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.
- Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modeled as AWGN of appropriate power for N_{oc} to be fulfilled.
- Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.9.3.2.2-3: UTRAN FDD cell specific test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN TDD

Parameter		Unit	Test 1	Test 2	
			Cell 2	Cell 2	
	CPICH_Ec/lor	dB	-10	-10	
	PCCPCH_Ec/lor	dB	-12	-12	
	SCH_Ec/lor	dB	-12	-12	
	PICH_Ec/lor	dB			
	DPCH_Ec/lor	dB	-	-	
	OCNS_Ec/lor	dB	-0.94	-0.94	
loc	Band I, IV, VI, X, XI, XIX,	dBm/3.84		-94.46	
	XXI	MHz			
	Band II, V, VII			-92.46	
	Band XXV, XXVI		-60.00	-90.96 (Note 3)	
	Band III, VIII, XII, XIII, XIV, XX, XXII			-91.46	
	Band IX (Note 2)			-93.46	
	Îor/loc	dB	9.54	-9.54	
CPICH	Band I, IV, VI, X, XI, XIX,	dBm		-114.0	
RSCP,	XXI				
Note 1	Band II, V, VII			-112.0	
	Band XXV, XXVI		-60.46	-110.5 (Note 3)	
	Band III, VIII, XII, XIII, XIV,			-111.0	
	XX, XXII				
	Band IX (Note 2)			-113.0	
Io, Note 1	Band I, IV, VI, X, XI, XIX,	dBm/3.84		-94.0	
	XXI	MHz			
	Band II, V, VII			-92.0	
	Band XXV, XXVI Band III, VIII, XII, XIII, XIV,		-50.00	-90.5 (Note 3)	
				-91.0	
	XX, XXII				
	Band IX (Note 2)			-93.0	
Pro	ppagation condition	-	AWGN	AWGN	

NOTE 1: CPICH RSCP and lo levels have been calculated from other parameters for information purposes.

They are not settable parameters themselves.

NOTE 2: For the UE which supports both Band III and Band IX operating frequencies, the measurement performance requirements for Band III shall apply to the multi-band UE.

NOTE 3: The test parameter is modified by -1.5 dB when the carrier frequency of the assigned UTRA channel is within 869-894 MHz for the UE which supports both Band V and Band XXVI operating frequencies.

Tests shall be done sequentially. Test 1 shall be done first. After test 1 has been executed test parameters for test 2 shall be set within 5 seconds so that UE does not loose the Cell 2 in between the tests.

A.9.3.2.3 Test Requirements

The CPICH RSCP measurement absolute accuracy shall meet the requirements in Clause 9.2.1.

A.9.3.3 E-UTRAN FDD for 5MHz Bandwidth

A.9.3.3.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.9.3.1.1.

A.9.3.3.2 Parameters

The parameters of this test are the same as defined in Subclause A.9.3.1.2 except that the values of the parameters in the Table A.9.3.3.2-1 will replace the values of the corresponding parameters in A.9.3.1.2-1, and the values of E-UTRAN FDD cell specific parameters in the Table A.9.3.3.2-2 shall be adopted, and the values of UTRA FDD cell specific parameters shall be reused as defined in Table A.9.3.1.2-3 of Subclause A.9.3.1.2.

Table A.9.3.3.2-1: General test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN FDD for 5MHz bandwidth

Parameter	Unit	Value	Comment		
PDSCH parameters		DL Reference Measurement Channel R.5 FDD	As specified in clause A.3.1.1.1		
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.11 FDD	As specified in clause A.3.1.2.1		
E-UTRAN Channel Bandwidth (BW _{channel})	MHz	5			
Note 1: See Table A.9.3.1.2-1 for other general test parameters.					

Table A.9.3.3.2-2: E-UTRAN FDD cell specific test parameters for UTRAN FDD CPICH RSCP absolute measurement accuracy test in E-UTRAN FDD for 5MHz bandwidth

Par	ameter	Unit	Test 1	Test 2	
E-UTRAN RF	Channel Number			1	
BW _{channel}		MHz	5		
OCNG Patterns defined in A.3.2.1.15 (OP.15 FDD)			OP	15 FDD	
	P.15 FDD)		01 .	10 1 00	
PBCH_RA		dB			
PBCH_RB		dB			
PSS_RA		dB			
SSS_RA		dB			
PCFICH_RB		dB			
PHICH_RA		dB			
PHICH_RB				0	
PDCCH_RA		dB			
PDCCH_RB		dB			
PDSCH_RA		dB			
PDSCH_RB		dB			
OCNG_RA ^{Note}	1	dB			
OCNG_RB ^{Note}	1	dB			
N_{oc} Note 2	Band 31	dBm/15 kHz	-98		
RSRP Note 3	Band 31	dBm/15 kHz		-94	
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB		4	
SCH_RP Note 3	Band 31	dBm/15 kHz		-94	
\hat{E}_s/N_{oc}		dB		4	
Io ^{Note3}	Band 31	dBm/4.5 MHz	-	67.8	
Propagation C				WGN	
			e fully allocated and		
Note 2: Inte	transmitted power spectral density is achieved for all OFDM symbols. Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modeled as AWGN of				
арр	appropriate power for $N_{ m ac}$ to be fulfilled.				
Note 3: RSI	RP, SCH_RP and le	o levels have beer	derived from other pole parameters thems		

A.9.3.3.3 Test Requirements

The test requirements defined in section A.9.3.1.3 shall apply to this test case.

A.9.4 UTRAN FDD CPICH Ec/No

A.9.4.1 E-UTRAN FDD

A.9.4.1.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH Ec/No absolute measurement accuracy is within the specified limits. This test will verify the requirements in Clause 9.2.3. There are three different test setups with different UTRAN parameters.

A.9.4.1.2 Parameters

The test parameters are given in Tables A.9.4.1.2-1, A.9.4.1.2-2 and A.9.4.1.2-3 below.

Table A.9.4.1.2-1: General test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN FDD

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.1
parameters		Channel R.6 FDD	
E-UTRAN RF Channel		1	One E-UTRAN FDD carrier frequency is
Number			used.
UTRAN RF Channel		1	One UTRAN FDD carrier frequency is
Number			used.
E-UTRAN Channel	MHz	10	
Bandwidth (BW _{channel})			
Active cell		Cell 1	E-UTRAN cell 1 on RF channel number 1
Neighbor cells		Cell 2	UTRAN cell 2 on RF channel number 1
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Inter-RAT (UTRAN FDD)		CPICH Ec/N0	
measurement quantity			
Monitored UTRA FDD cell		12	UTRA cells on UTRA RF channel 1
list size			provided in the cell list.
CP length		Normal	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF

Table A.9.4.1.2-2: E-UTRAN FDD cell specific test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN FDD

Parameter	Unit	Test 1	Test 2	Test 3	
E-UTRAN RF Channel Number		1			
BW _{channel}	MHz		10		
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD)			OP.1 FDD		
PBCH_RA	dB				
PBCH RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB				
PHICH_RB	dB	0			
PDCCH_RA	dB	7			
PDCCH_RB	dB	1			
PDSCH_RA	dB	1			
PDSCH_RB	dB				
OCNG_RA ^{Note 1}	dB				
OCNG_RB ^{Note 1}	dB				
$N_{oc}^{ m Note 2}$	dBm/15 kHz		-98		
RSRP Note 3	dBm/15 kHz		-94		
\hat{E}_{s}/I_{ot}	dB	4			
SCH_RP Note 3	dBm/15 kHz		-94		
\hat{E}_s/N_{oc}	dB		4		
Propagation Condition			AWGN		

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modeled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.9.4.1.2-3: UTRAN FDD cell specific test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN FDD

	Parameter	Unit	Test 1	Test 2	Test 3
	Parameter	Onit	Cell 2	Cell 2	Cell 2
	CPICH_Ec/lor		-10	-10	-10
P	PCCPCH_Ec/lor	dB	-12	-12	-12
	SCH_Ec/lor	dB	-12	-12	-12
	PICH_Ec/lor	dB	-15	-15	-15
	DPCH_Ec/lor	dB	-	-	-
	OCNS_Ec/lor	dB	-0.94	-0.94	-0.94
	Band I, IV, VI, X, XI, XIX, XXI				-94.46
	Band II, V, VII	dBm/			-92.46
loc	Band XXV, XXVI	3.84	-52.22	-87.27	-90.96 (Note 3)
	Band III, VIII, XII,	MHz			-91.46
	XIII, XIV, XX, XXII Band IX (Note 2)				-93.46
	Îor/loc	dB	-1.75	-4.7	-9.54
CP	ICH Ec/Io, Note 1	dBm	-14.0	-16.0	-20.0
	Band I, IV, VI, X, XI, XIX, XXI				-94
lo,	Band II, V, VII	dBm/			-92.0
Note	Band XXV, XXVI	3.84	-50	-86	-90.5 (Note 3)
1	Band III, VIII, XII,	MHz			-91.0
	XIII, XIV, XX, XXII Band IX (Note 2)				-93
Pro	pagation condition	-	AWGN	AWGN	AWGN

NOTE 1: CPICH Ec/lo and lo levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.

NOTE 2: For the UE which supports both Band III and Band IX operating frequencies, the measurement performance requirements for Band III shall apply to the multi-band UE.

NOTE 3: The test parameter is modified by -1.5 dB when the carrier frequency of the assigned UTRA channel is within 869-894 MHz for the UE which supports both Band V and Band XXVI operating frequencies.

Tests shall be done sequentially. Test 1 shall be done first. After test 1 has been executed test parameters for tests 2 and 3 shall be set within 5 seconds so that UE does not loose the Cell 2 in between the tests.

A.9.4.1.3 Test Requirements

The CPICH Ec/No measurement absolute accuracy shall meet the requirements in Clause 9.2.3.

The effect of assumed thermal noise and noise generated in the receiver (-99 dBm for frequency bands I, IV, VI, X, XI, XIX and XXI; -98 dBm for frequency band IX, -97dBm for frequency bands II, V and VII; -95.5dBm for frequency band XXV and XXVI; and -96dBm for frequency band III) shall be added into the required accuracy. The test requirements for the absolute CPICH_Ec/Io measurement are shown in Table A.9.4.1.3-1.

Table A.9.4.1.3-1: CPICH Ec/lo absolute accuracy

		Accuracy [dB]		Conditions
Parameter	Unit	Normal condition	Extreme condition	lo [dBm/3,84 MHz]

ODIOLI Falla	4D	-2.71.5 for -14 ≤ CPICH Ec/lo -3.22 for -16 ≤ CPICH Ec/lo < -14 -4.23 for -20 ≤ CPICH Ec/lo < -16	-4.23	-9487(Band I, IV, VI, X, XI, XIX, XXI) -9285 (Band II, V, VII) -90.583.5 (Band XXV, XXVI (Note 2)) -9184 (Band III, VIII, XII, XIII, XIV, XX, XXII) 9386 (Band IX (Note 1))
CPICH_Ec/lo	dB	± 1.5 for -14 ≤ CPICH Ec/lo ± 2 for -16 ≤ CPICH Ec/lo < -14 ± 3 for -20 ≤ CPICH Ec/lo < -16	± 3	-8750(Band I, IV, VI, X, XI, XIX, XXI) -8550 (Band II, V, VII) -83.550 (Band XXV, XXVI (Note 2)) -8450 (Band III, VIII, XII, XIII, XIV, XX, XXII) -8650 (Band IX (Note 1))

NOTE1: For the UE which supports both Band III and Band IX operating frequencies, the measurement performance requirements for Band III shall apply to the multi-band UE.

NOTE 2: The test parameter is modified by -1.5 dB when the carrier frequency of the assigned UTRA channel is within 869-894 MHz for the UE which supports both Band V and Band XXVI operating frequencies.

A.9.4.2 E-UTRAN TDD

A.9.4.2.1 Test Purpose and Environment

The purpose of this test is to verify that the CPICH Ec/No absolute measurement accuracy is within the specified limits. This test will verify the requirements in Clause 9.2.3. There are three different test setups with different UTRAN parameters.

A.9.4.2.2 Parameters

The test parameters are given in Tables A.9.4.2.2-1, A.9.4.2.2-2 and A.9.4.2.2-3 below.

Table A.9.4.2.2-1: General test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN TDD

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2
E-UTRAN RF Channel Number		1	One E-UTRAN TDD carrier frequency is used.
UTRAN RF Channel Number		1	One UTRAN FDD carrier frequency is used.
E-UTRAN Channel Bandwidth (BW _{channel})	MHz	10	
Active cell		Cell 1	E-UTRAN cell 1 on RF channel number 1
Neighbor cells		Cell 2	UTRAN cell 2 on RF channel number 1
Gap Pattern Id		0	As specified in TS 36.133 clause 8.1.2.1.
Inter-RAT (UTRAN FDD) measurement quantity		CPICH Ec/N0	
Monitored UTRA FDD cell list size		12	UTRA cells on UTRA RF channel 1 provided in the cell list.
CP length		Normal	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF

Table A.9.4.2.2-2: E-UTRAN TDD cell specific test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN TDD

Parameter	Unit	Test 1	Test 2	Test 3		
E-UTRAN RF Channel Number		1				
BW _{channel}	MHz	10				
Special subframe configuration Note1		6				
Uplink-downlink configuration Note 1			1			
OCNG Patterns defined in			OP.1 TDD			
A.3.2.2.1 (OP.1 TDD)			OF.1 1DD			
PBCH_RA	dB					
PBCH_RB	dB					
PSS_RA	dB					
SSS_RA	dB					
PCFICH_RB	dB					
PHICH_RA	dB	0				
PHICH_RB	dB					
PDCCH_RA	dB					
PDCCH_RB	dB					
PDSCH_RA	dB					
PDSCH_RB	dB					
OCNG_RA ^{Note 2}	dB	-				
OCNG_RB ^{Note 2}	dB					
N _{oc} Note 3	dBm/15		-98			
RSRP Note 4	kHz dBm/15					
RSRP	kHz	-94				
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	4				
SCH_RP Note 4	dBm/15 kHz	-94				
\hat{E}_s/N_{oc}	dB		4			
Propagation Condition			AWGN			

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 2: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modeled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.9.4.2.2-3: UTRAN FDD cell specific test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN TDD

	Parameter	Unit	Test 1	Test 2	Test 3
	Parameter	Onit	Cell 2	Cell 2	Cell 2
	CPICH_Ec/lor		-10	-10	-10
P	PCCPCH_Ec/lor	dB	-12	-12	-12
	SCH_Ec/lor	dB	-12	-12	-12
	PICH_Ec/lor	dB	-15	-15	-15
	DPCH_Ec/lor	dB	-	-	-
	OCNS_Ec/lor	dB	-0.94	-0.94	-0.94
	Band I, IV, VI, X, XI, XIX, XXI				-94.46
	Band II, V, VII	dBm/			-92.46
loc	Band XXV, XXVI	3.84	-52.22	-87.27	-90.96 (Note 3)
	Band III, VIII, XII,	MHz			-91.46
	XIII, XIV, XX, XXII Band IX (Note 2)				-93.46
	Îor/loc	dB	-1.75	-4.7	-9.54
CP	ICH Ec/Io, Note 1	dBm	-14.0	-16.0	-20.0
	Band I, IV, VI, X, XI, XIX, XXI				-94
lo,	Band II, V, VII	dBm/			-92.0
Note	Band XXV, XXVI	3.84	-50	-86	-90.5 (Note 3)
1	Band III, VIII, XII,	MHz			-91.0
	XIII, XIV, XX, XXII Band IX (Note 2)				-93
Pro	pagation condition	-	AWGN	AWGN	AWGN

NOTE 1: CPICH Ec/lo and lo levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.

NOTE 2: For the UE which supports both Band III and Band IX operating frequencies, the measurement performance requirements for Band III shall apply to the multi-band UE.

NOTE 3: The test parameter is modified by -1.5 dB when the carrier frequency of the assigned UTRA channel is within 869-894 MHz for the UE which supports both Band V and Band XXVI operating frequencies.

Tests shall be done sequentially. Test 1 shall be done first. After test 1 has been executed test parameters for tests 2 and 3 shall be set within 5 seconds so that UE does not loose the Cell 2 in between the tests.

A.9.4.2.3 Test Requirements

The CPICH Ec/No measurement absolute accuracy shall meet the requirements in Clause 9.2.3.

The effect of assumed thermal noise and noise generated in the receiver (-99 dBm for frequency bands I, IV, VI, X, XI, XIX and XXI; -98 dBm for frequency band IX, -97dBm for frequency bands II, V and VII; -95.5dBm for frequency band XXV and XXVI; and -96dBm for frequency band III) shall be added into the required accuracy. The test requirements for the absolute CPICH_Ec/Io measurement are shown in Table A.9.4.2.3-1.

Table A.9.4.2.3-1: CPICH Ec/lo absolute accuracy

		Accuracy [dB]	Conditions	
Parameter	Unit	Normal condition	Extreme	lo [dBm/3,84 MHz]
raiametei	Oilit	Normal condition	condition	10 [dB11/3,04 W112]

	dB	-2.71.5 for -14 ≤ CPICH Ec/lo -3.22 for -16 ≤ CPICH Ec/lo < -14 -4.23 for -20 ≤ CPICH Ec/lo < -16	-4.23	-9487(Band I, IV, VI, X, XI, XIX, XXI) -9285 (Band II, V, VII) -90.583.5 (Band XXV, XXVI (Note 2)) -9184 (Band III, VIII, XII, XIII, XIV, XX, XXII) 9386 (Band IX (Note 1))
CPICH_Ec/lo	αB	± 1.5 for -14 ≤ CPICH Ec/lo ± 2 for -16 ≤ CPICH Ec/lo < -14 ± 3 for -20 ≤ CPICH Ec/lo < -16	± 3	-8750(Band I, IV, VI, X, XI, XIX, XXI) -8550 (Band II, V, VII) -83.550 (Band XXV, XXVI (Note 2)) -8450 (Band III, VIII, XII, XIII, XIV, XX, XXII) -8650 (Band IX (Note 1))

NOTE1: For the UE which supports both Band III and Band IX operating frequencies, the measurement performance requirements for Band III shall apply to the multi-band UE.

NOTE 2: The test parameter is modified by -1.5 dB when the carrier frequency of the assigned UTRA channel is within 869-894 MHz for the UE which supports both Band V and Band XXVI operating frequencies.

A.9.4.3 E-UTRAN FDD for 5MHz Bandwidth

A.9.4.3.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.9.4.1.1.

A.9.4.3.2 Parameters

The parameters of this test are the same as defined in Subclause A.9.4.1.2 except that the values of the parameters in the Table A.9.4.3.2-1 will replace the values of the corresponding parameters in A.9.4.1.2-1, and the values of E-UTRAN FDD cell specific parameters in the Table A.9.4.3.2-2 shall be adopted, and the values of UTRA FDD cell specific parameters shall be reused as defined in Table A.9.4.1.2-3 of Subclause A.9.4.1.2.

Table A.9.4.3.2-1: General test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN FDD for 5MHz bandwidth

Parameter	Unit	Value	Comment		
PDSCH parameters		DL Reference Measurement	As specified in clause A.3.1.1.1		
		Channel R.5 FDD			
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.1		
parameters		Channel R.11 FDD			
E-UTRAN Channel	MHz	5			
Bandwidth (BW _{channel})					
Note 1: See Table A.9.4.1.2-1 for other general test parameters.					

Table A.9.4.3.2-2: E-UTRAN FDD cell specific test parameters for UTRAN FDD CPICH Ec/No absolute measurement accuracy test in E-UTRAN FDD for 5MHz bandwidth

Parameter		Unit	Test 1	Test 2	Test 3		
E-UTRAN RF Ch	annel Number		1				
BW _{channel}		MHz		5			
OCNG Patterns of	defined in			OP.15 FDD			
A.3.2.1.15 (OP.15	5 FDD)			OP. 15 FDD			
PBCH_RA		dB					
PBCH_RB		dB					
PSS_RA		dB					
SSS_RA		dB					
PCFICH_RB		dB					
PHICH_RA		dB					
PHICH_RB		dB		0			
PDCCH_RA		dB					
PDCCH_RB		dB					
PDSCH_RA		dB					
PDSCH_RB		dB					
OCNG_RA ^{Note 1}		dB					
OCNG_RB ^{Note 1}		dB					
$N_{oc}^{ m Note~2}$	Band 31	dBm/15 kHz		-98			
RSRP Note 3	Band 31	dBm/15 kHz		-94			
$\hat{\mathbf{E}}_{\scriptscriptstyle \mathrm{s}}/\mathbf{I}_{\scriptscriptstyle \mathrm{ot}}$		dB		4			
SCH_RP Note 3	Band 31	dBm/15 kHz		-94			
\hat{E}_s/N_{oc}	\hat{E}_s/N_{oc}		4				
Io ^{Note3}	Band 31	dBm/4.5 MHz	-67.8				
Propagation Cond	Propagation Condition AWGN						
Note 1: OCNG shall be used such that all cells are fully allocated and a constant total							
transmitted power spectral density is achieved for all OFDM symbols. Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modeled as AWGN of							

appropriate power for N_{oc} to be fulfilled.

RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

A.9.4.3.3 **Test Requirements**

The test requirements defined in section A.9.4.1.3 shall apply to this test case.

UTRAN TDD measurement A.9.5

P-CCPCH RSCP absolute accuracy for E-UTRAN FDD A.9.5.1

A.9.5.1.1 Test Purpose and Environment

The purpose of this test is to verify that the UTRAN TDD P-CCPCH RSCP measurement absolute accuracy is within the specified limits. This test will verify the requirements in clause 9.3.1 and applies to UE supporting this capability.

Gap pattern configuration with id #1 as specified in Table 8.1.2.1-1 is provided. In the measurement control information it is indicated to the UE that periodic reporting of the UTRA TDD P-CCPCH RSRP measurement is used.

A.9.5.1.2 Test parameters

In this set of test cases there are two cells. Cell 1 is a E-UTRA FDD cell and cell 2 is a UTRA TDD cell. The absolute accuracy of P-CCPCH RSCP measurements are tested by using test parameters in Table A.9.5.1-1, Table A.9.5.1-2, and Table A.9.5.1-3. In all test cases, Cell 1 is the PCell and Cell 2 is the target cell.

Table A.9.5.1-1: General test parameters for UTRA TDD P-CCPCH RSCP measurement absolute accuracy in E-UTRAN FDD

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.3.1.1.1
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.1
parameters		Channel R.6 FDD	
E-UTRAN RF Channel Number		1	One E-UTRAN FDD carrier frequency is used.
UTRAN RF Channel Number		2	One UTRAN TDD carrier frequency is used.
E-UTRAN Channel Bandwidth (BWchannel)	MHz	10	
Active cell		Cell 1	E-UTRAN FDD cell 1 on RF channel number 1
Neighbor cells		Cell 2	1.28Mcps UTRA TDD cell 2 on RF channel number 2
Gap Pattern Id		1	As specified in TS 36.133 clause 8.1.2.1.
CP length of cell 1		Normal	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	OFF
Inter-RAT (UTRAN TDD) measurement quantity		P-CCPCH RSRP	

Table A.9.5.1-2: UTRA TDD P-CCPCH RSCP measurement tests parameters (cell 1)

Parameter	Unit	Test 1	Test 2	Test 3
E-UTRA RF Channel Number		1		
BWchannel	MHz	10		
OCNG Patterns defined in A.3.2.1.1 (OP.1		,	OP.1 FDD	١
FDD)		`	JF.1 FDL	
PBCH_RA				
PBCH_RB				
PSS_RA				
SSS_RA				
PCFICH_RB				
PHICH_RA		0		
PHICH_RB	dB			
PDCCH_RA				
PDCCH_RB				
PDSCH_RA				
PDSCH_RB				
OCNG_RA ^{Note1}				
OCNG_RB ^{Note1}				
$N_{oc}^{ m Note2}$	dBm/15 kHz		-98	
\hat{E}_s / I_{ot}	dB		4	
RSRP ^{Note3}	dBm/15 kHz		-94	
Io ^{Note3}	dBm/9 MHz		-64.76	
\hat{E}_s / N_{oc}	dB		4	
Propagation condition	-		AWGN	

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as

AWGN of appropriate power for N to be fulfilled.

Note 3: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

Table A.9.5.1-3: UTRA TDD P-CCPCH RSCP measurement tests parameters (cell 2)

Parameter	Unit	Test 1		Test 2		Test 3	
DL timeslot number		0		DwPTS		0	DwPTS
UTRA RF Channel number Note2		Char	nel 2	Chan	nel 2	Char	nel 2
PCCPCH_Ec/lor	dB	-3		-3		-3	
DwPCH_Ec/lor	dB		0		0		0
OCNS_Ec/lor	dB	-3		-3		-3	
loc	dBm/1.28MHz	-54	4.1	-75	5.2	-6	97
Îor/loc	dB	2	2		5	()
PCCPCH RSCP Note1	dBm	-55.1		-73.2		-100	
lo Note1	dBm/1.28MHz	-5	50	-6	69	-6	94
Propagation condition				AW	GN		

Note 1: PCCPCH RSCP and lo levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.

Note 2: In the case of multi-frequency network of 1.28 Mcps TDD, the UTRA RF Channel Number can be set for the primary frequency in this test.

A.9.5.1.3 Test Requirements

The UTRA TDD P-CCPCH RSCP measurement accuracy shall meet the requirements in clause 9.3.1.

A.9.5.2 P-CCPCH RSCP absolute accuracy for E-UTRAN TDD

A.9.5.2.1 Test Purpose and Environment

The purpose of this test is to verify that the UTRAN TDD P-CCPCH RSCP measurement accuracy is within the specified limits. This test will verify the requirements in clause 9.3.1 and applies to UE supporting this capability.

Gap pattern configuration with id #1 as specified in Table 8.1.2.1-1 is provided. In the measurement control information it is indicated to the UE that periodic reporting of the UTRA TDD P-CCPCH RSRP measurement is used.

A.9.5.2.2 Test parameters

In this set of test cases there are two cells. Cell 1 is a E-UTRA TDD cell and cell 2 is a UTRA TDD cell. The absolute accuracy of P-CCPCH RSCP measurements are tested by using test parameters in Table A.9.5.2-1, Table A.9.5.2-2, and Table A.9.5.2-3. In all test cases, Cell 1 is the PCell and Cell 2 is the target cell.

Table A.9.5.2-1: General test parameters for UTRA TDD P-CCPCH RSCP measurement

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2
PCFICH/PDCCH/PHICH		DL Reference Measurement	As specified in clause A.3.1.2.2
parameters		Channel R.6 TDD	
E-UTRAN RF Channel Number		1	One E-UTRAN TDD carrier frequency is used.
UTRAN RF Channel Number		2	One UTRAN TDD carrier
			frequency is used.
E-UTRAN Channel Bandwidth (BWchannel)	MHz	10	
Active cell		Cell 1	E-UTRA TDD cell1 on RF channel number 1
Neighbour cell		Cell 2	1.28Mcps UTRA TDD Cell2 on RF channel number 2
Gap Pattern Id		1	As specified in TS 36.133 clause 8.1.2.1.
Uplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
CP length of cell 1		Normal	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Time offset between cells	ms	3	Asynchronous cells
Inter-RAT (UTRAN TDD) measurement quantity		P-CCPCH RSCP	

Table A.9.5.2-2: UTRA TDD P-CCPCH RSCP measurement tests parameters (cell 1)

Parameter	Unit	Test 1	Test 2	Test 3	
E-UTRA RF Channel Number		1			
BWchannel	MHz	10			
OCNG Patterns defined in A.3.2.2.1 (OP.1			OP.1 TDD	1	
TDD)		`		<u>'</u>	
PBCH_RA					
PBCH_RB					
PSS_RA					
SSS_RA					
PCFICH_RB					
PHICH_RA					
PHICH_RB	dB	0			
PDCCH_RA					
PDCCH_RB					
PDSCH_RA					
PDSCH_RB					
OCNG_RA ^{Note1}					
OCNG_RB ^{Note1}					
$N_{oc}^{ m Note2}$	dBm/15 kHz		-98		
\hat{E}_s / I_{ot}	dB		4		
RSRP ^{Note3}	dBm/15 kHz		-94		
Io ^{Note3}	dBm/9 MHz		-64.76		
\hat{E}_s / N_{oc}	dB		4		
Propagation condition	-		AWGN		

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna port.

Table A.9.5.2-3: UTRA TDD P-CCPCH RSCP measurement tests parameters (cell 2)

Parameter	Unit	Test 1		Tes	Test 2		Test 3	
DL timeslot number		0		DwPTS		0	DwPTS	
UTRA RF Channel number Note2		Char	nel 2	Char	nel 2	Char	nel 2	
PCCPCH_Ec/lor	dB	-3		-3		-3		
DwPCH_Ec/lor	dB		0		0		0	
OCNS_Ec/lor	dB	-3		-3		-3		
loc	dBm/1.28MHz	-54	4.1	-7	5.2	-6	97	
Îor/loc	dB	2	2		5	()	
PCCPCH RSCP Note1	dBm	-55.1		-73.2		-100		
lo Note1	dBm/1.28MHz	-5	50	-6	69	-6	94	
Propagation condition				AW	'GN			

Note 1: PCCPCH RSCP and lo levels have been calculated from other parameters for information purposes. They are not settable parameters themselves.

Note 2: In the case of multi-frequency network of 1.28 Mcps TDD, the UTRA RF Channel Number can be set for the primary frequency in this test.

A.9.5.2.3 Test Requirements

The UTRA TDD P-CCPCH RSCP measurement accuracy shall meet the requirements in clause 9.3.1.

A.9.6 GSM Carrier RSSI

A.9.6.1 E-UTRAN FDD

A.9.6.1.1 Test Purpose and Environment

The purpose of this test is to verify that the GSM Carrier RSSI measurement accuracy is within the specified limits when the active cell is E-UTRAN FDD. This test will verify the requirements in clause 9.4.1. There are 12 different test setups with different signal levels for the GSM cells.

Measurement gaps are configured to measure on the GSM cells. Table A.9.6.1.1-2 defines the cell specific test parameters for the E-UTRAN FDD cell. In the measurement control information it is indicated to the UE that periodic reporting of the GSM RSSI measurement is used. The limits of the GSM test parameters in terms of GSM BCCH received level at the receiver inputs are defined in Table A.9.6.1.1-3.

Table A.9.6.1.1-1: General GSM Carrier RSSI test parameters

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel	As specified in clause A.3.1.1.1.
(E-UTRAN FDD)		R.0 FDD	
PCFICH/PDCCH/PHICH		DL Reference Measurement Channel	As specified in clause A.3.1.2.1.
parameters		R.6 FDD	
(E-UTRAN FDD)			
Active cell	-	Cell 1	
DRX	-	OFF	
Gap pattern Id		1	As specified in TS 36.133
			clause 8.1.2.1.
Filtering coefficient	-	0	L3 filtering is not used.
Inter-RAT measurement		GSM Carrier RSSI	
quantity			
Monitored cell list size		6 GSM neighbours including ARFCN 1	Included in the Measurement
			control information

Table A.9.6.1.1.-2: E-UTRAN FDD Cell specific test parameters for GSM Carrier RSSI accuracy test in E-UTRAN FDD

Parameter	Unit	Tests 1-12
E-UTRAN RF Channel Number		1
BW _{channel}	MHz	10
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD)		OP.1 FDD

PBCH_RA	dB	
PBCH_RB	dB	
PSS_RA	dB	
SSS_RA	dB	
PCFICH_RB	dB	
PHICH_RA	dB	0
PHICH_RB	dB	0
PDCCH_RA	dB	
PDCCH_RB	dB	
PDSCH_RA	dB	
PDSCH_RB	dB	
OCNG_RA ^{Note 1}	dB	
OCNG_RB ^{Note 1}	dB	
$N_{oc}^{ m Note~2}$	dBm/15 kHz	-98
RSRP Note 3	dBm/15 kHz	-94
$\hat{\mathrm{E}}_{_{\mathrm{s}}}/\mathrm{I}_{_{\mathrm{ot}}}$	dB	4
SCH_RP Note 3	dBm/15 kHz	-94
\hat{E}_s/N_{oc}	dB	4
Propagation Condition		AWGN

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modeled as AWGN of appropriate power for $N_{\it ac}$ to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.9.6.1.1-3: BCCH signal levels at receiver input in dBm

Step	BCCH1	BCCH2	ВССН3	BCCH4	BCCH5	ВССН6
1	-38.5	-38.5	NA	NA	NA	NA
2	-48.5	-48.5	NA	NA	NA	NA
3	-70.5	-70.5	NA	NA	NA	NA
4	-109.5	-109.5	NA	NA	NA	NA
5	-57.5	NA	-54.5	NA	NA	NA
6	-64.5	NA	-59.5	NA	NA	NA
7	-71.5	NA	NA	-64.5	NA	NA
8	-78.5	NA	NA	-69.5	NA	NA
9	-85.5	NA	NA	NA	-74.5	NA
10	-92.5	NA	NA	NA	-79.5	NA
11	-99.5	NA	NA	NA	NA	-84.5
12	-106.5	NA	NA	NA	NA	-89.5

A.9.6.1.2 Test Requirements

The GSM Carrier RSSI measurement accuracy shall meet the requirements in clause 9.4.1.

A.9.6.2 E-UTRAN TDD

A.9.6.2.1 Test Purpose and Environment

The purpose of this test is to verify that the GSM Carrier RSSI measurement accuracy is within the specified limits when the active cell is E-UTRAN TDD. This test will verify the requirements in clause 9.4.1. There are 12 different test setups with different signal levels for the GSM cells.

Measurement gaps are configured to measure on the GSM cells. Table A.9.6.2.1-2 defines the cell specific test parameters for the E-UTRAN TDD cell. In the measurement control information it is indicated to the UE that periodic reporting of the GSM RSSI measurement is used. The limits of the GSM test parameters in terms of GSM BCCH received level at the receiver inputs are defined in Table A.9.6.2.1-3.

Table A.9.6.2.1-1: General GSM Carrier RSSI test parameters

Parameter	Unit	Value	Comment
PDSCH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in clause A.3.1.1.2.
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in clause A.3.1.2.2.
Active cell	-	Cell 1	
DRX	-	OFF	
Uplink-downlink configuration of cell 1		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211
Gap pattern Id		1	As specified in TS 36.133 clause 8.1.2.1.
Filtering coefficient	-	0	L3 filtering is not used.
Inter-RAT measurement quantity		GSM Carrier RSSI	
Monitored cell list size		6 GSM neighbours including ARFCN 1	Included in the Measurement control information

Table A.9.6.2.1-2: E-UTRAN TDD Cell specific test parameters for GSM Carrier RSSI accuracy test in E-UTRAN TDD

Unit	Tests 1 - 12
	4
	1
MHz	10
	OP.1 TDD
	OF.1 1DD
dB	
dB	0
dB	1
dB	1
dB	1
dB	
dB	1
dB	1
dBm/15 kHz	-98
dBm/15 kHz	-94
dB	4
dBm/15 kHz	-94
dB	4
	AWGN
	MHz dB dB dB dB dB dB dB dB dB dB dB dB dB

Note 1: OCNG shall be used such that all cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modeled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.9.6.2.1-3: BCCH signal levels at receiver input in dBm

Step	BCCH1	BCCH2	ВССН3	BCCH4	BCCH5	ВССН6
1	-38.5	-38.5	NA	NA	NA	NA
2	-48.5	-48.5	NA	NA	NA	NA
3	-70.5	-70.5	NA	NA	NA	NA
4	-109.5	-109.5	NA	NA	NA	NA
5	-57.5	NA	-54.5	NA	NA	NA
6	-64.5	NA	-59.5	NA	NA	NA
7	-71.5	NA	NA	-64.5	NA	NA
8	-78.5	NA	NA	-69.5	NA	NA
9	-85.5	NA	NA	NA	-74.5	NA
10	-92.5	NA	NA	NA	-79.5	NA
11	-99.5	NA	NA	NA	NA	-84.5
12	-106.5	NA	NA	NA	NA	-89.5

A.9.6.2.2 Test Requirements

The GSM Carrier RSSI measurement accuracy shall meet the requirements in clause 9.4.1.

A.9.7 UE Rx – Tx Time Difference

A.9.7.1 E-UTRAN FDD UE Rx – Tx time difference case

A.9.7.1.1 Test Purpose and Environment

The purpose of this test is to verify that the E-UTRAN FDD UE Rx - Tx time difference measurement accuracy is within the specified limits in Clause 9.1.9.

There is only one active cell in the test. The tested UE is connected with the PCell, configured to transmit SRS signals periodically, and signaled to report UE Rx – Tx time difference measurement. The test equipment measures the transmit timing of the UE using the transmitted SRS, and measures the receive timing using the downlink CRS. The test equipment then compares the difference of these two timings to the UE Rx-Tx measurement reported by the UE.

A.9.7.1.2 Test parameters

The parameters for this test case are defined in Table A.9.7.1.2-1, and the SRS configuration used is defined in Table A.9.7.1.2-2.

Table A.9.7.1.2-1: FDD UE Rx – Tx time difference test parameters

Parameter	Unit	Test 1	Test 2
E-UTRAN RF Channel Number		1	1
BW _{channel}	MHz	1.4	10
DRX		Ol	FF
PDSCH Reference measurement channel defined in A.3.1.1.1		R.2 FDD	R.0 FDD
PDSCH allocation	n_{PRB}	2—3	13—36
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.1		R.8 FDD	R.6 FDD
OCNG Patterns defined in A.3.2.1.3 (OP.3 FDD) and A.3.2.1.1 (OP.1 FDD)		OP.3 FDD	OP.1 FDD
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB	0	0
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA ^{Note1}	dB		
OCNG_RB ^{Note1}	dB		
$N_{oc}^{ m Note2}$	dBm/15 kHz	-98	-98
RSRP Note3	dBm/15 kHz	-101	-101
\hat{E}_s/N_{oc}	dB	-3	-3
To Note3	dBm/1.08 MHz	-77.66	N/A
	dBm/9 MHz	N/A	-68.45
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathbf{I}_{\mathrm{ot}}$	dB	-3	-3
Propagation Condition			'GN

Note 1: OCNG shall be used such that the resources in the active cell are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modeled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.9.7.1.2-2: Sounding Reference Symbol Configuration to be used in FDD UE Rx – Tx time difference test

Field	Test 1	Test 2	Commont			
Field	Value		Comment			
srsBandwidthConfiguration	bw7	bw5				
srsSubframeConfiguration	S	c1				
ackNackSrsSimultaneousTransmission	FA	LSE				
srsMaxUpPTS	N	I/A	Not applicable for FDD			
srsBandwidth		0	No hopping			
srsHoppingBandwidth	hbw0					
frequencyDomainPosition	0					
Duration	TRUE		Indefinite duration			
Srs-ConfigurationIndex	0		SRS periodicity of 2ms for all			
			Tests.			
transmissionComb	0					
cyclicShift	cs0		No cyclic shift			
SRS-AntennaPort	an1		Number of antenna ports used			
			for SRS transmission			
Note: For further information see clause 6.3.2 in TS 36.331.						

A.9.7.1.3 Test Requirements

The UE Rx – Tx time difference measurement accuracy shall fulfill the requirements in Clause 9.1.9.1.

A.9.7.2 E-UTRA TDD

A.9.7.2.1 Test Purpose and Environment

The purpose of this test is to verify that the E-UTRAN TDD UE Rx-Tx time difference measurement accuracy is within the specified limits in clause 9.1.9.

There is only one cell in the test. The tested UE is connected with the PCell, configured to transmit SRS signals periodcally, and signaled to report UE Rx - Tx time difference measurement. The test equipment measures the transmit timing of the UE using the transmitted SRS, and measures the receive timing using the downlink CRS. The test equipment then compares the difference of these two timings to the UE Rx - Tx measurement reported by the UE.

A.9.7.2.2 Test parameters

The parameters for this test case are defined in Table A.9.7.2.2-1, and the SRS configuration used is defined in Table A.9.7.2.2-2.

Table A.9.7.2.2-1: Cell specific test parameters for UE Rx-Tx time difference measurement

Parameter	Unit	Tests 1	Tests 2
E-UTRAN RF Channel Number	-	1	1
BW _{channel}	MHz	1.4	10
Uplink-downlink configuration of cell Note1		1	1
Special subframe configuration of cell Note1		6	6
PDSCH Reference measurement channel defined in	-	R.2 TDD	R.0 TDD
A.3.1.1.2			
PDSCH allocation	$n_{\scriptscriptstyle PRB}$	2-3	13-36
PDCCH/PCFICH/PHICH Reference measurement	-	R.8 TDD	R.6 TDD
channel defined in A.3.1.2.2			
OCNG Patterns defined in A.3.2.2.3 (OP.3 TDD) and	-	OP.3 TDD	OP.1 TDD
A.3.2.2.1 (OP.1 TDD)			
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		
PHICH_RA	dB		
PHICH_RB	dB	0	0
PDCCH_RA	dB		
PDCCH_RB	dB		
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA ^{Note2}	dB		
OCNG_RB ^{Note2}	dB		
N _{oc} Note 3	dBm/15 kHz	-98	-98
RSRP Note 4	dBm/15 kHz	-101	-101
\hat{E}/N	dB	-3	-3
lo Note 4	dBm/1.08 MHz	-77.66	N/A
	dBm/9 MHz	N/A	-68.45
$\hat{\mathbf{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	-3	-3
Propagation Condition		AW	'GN

Note 1: For special subframe and uplink-downlink configurations see Tables 4.2-1 and 4.2-2 in TS 36.211.

Note 2: OCNG shall be used such that the cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modeled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table A.9.7.2.2-2: Sounding Reference Symbol Configuration to be used in TDD UE Rx – Tx time difference test

Field	Test 1	Test 2	Comment			
Field	Value		Comment			
srsBandwidthConfiguration	bw7	bw5				
srsSubframeConfiguration	S	c1				
ackNackSrsSimultaneousTransmission	FA	LSE				
srsMaxUpPTS	TF	RUE				
srsBandwidth		0	No hopping			
srsHoppingBandwidth	hbw0					
frequencyDomainPosition	0					
Duration	TRUE		Indefinite duration			
Srs-ConfigurationIndex	10		SRS periodicity of 10ms for all			
			Tests.			
transmissionComb	0					
cyclicShift	cs0		No cyclic shift			
SRS-AntennaPort	an1		Number of antenna ports used			
			for SRS transmission			
Note: For further information see clause 6.3.2 in TS 36.331.						

A.9.7.2.3 Test Requirements

The UE Rx – Tx time difference measurement accuracy shall fulfill the requirements in clause 9.1.9.1.

A.9.7.3 E-UTRAN FDD UE Rx–Tx Time Difference under Time-Domain Measurement Resource Restriction with Non-MBSFN ABS

A.9.7.3.1 Test Purpose and Environment

The purpose of this test is to verify that the E-UTRAN FDD UE Rx-Tx time difference measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.9.3 when time-domain measurement resource restriction is configured for PCell measurements via higher-layer signalling [2] and non-MBSFN ABS are configured in the interfering cell.

A.9.7.3.2 Test parameters

In this test case, there are two synchronous cells, Cell 1 and Cell 2, on the same RF channel. Cell 1 is the PCell on which UE Rx-Tx is measured, and Cell 2 is the interfering cell. Non-MBSFN ABS pattern is configured in Cell 2 during the entire test.

The tested UE is connected to the PCell and configured to transmit SRS signals periodically. The SRS configuration is provided to the UE before the measurement starts. The UE is configured to report UE Rx–Tx time difference measurement. The test equipment measures the transmit timing of the UE using the transmitted SRS, and measures the receive timing using the downlink CRS. The test equipment then compares the difference of these two timings to the UE Rx-Tx measurement reported by the UE. The UE is configured by higher layers via Cell 1 with a time-domain measurement resource restriction pattern for performing E-UTRAN FDD intra-frequency measurements on PCell. The information for both patterns shall be provided to the UE before the measurement starts.

The general and cell-specific parameters for this test case are defined in Table A.9.7.3.2-1 and Table A.9.7.3.2-2, respectively, and the SRS configuration used is specified in Table A.9.7.3.2-3.

Table A.9.7.3.2-1: General test parameters for FDD UE Rx-Tx time difference measurement under time-domain measurement resource restriction with non-MBSFN ABS

Parameter	Unit	Value	Comment
Serving cell (PCell)		Cell 1	The measured cell
Neighbour cell		Cell 2	The cell interfering to Cell 1
PCell ABS configuration		Non-MBSFN ABS	As defined in Table A.3.4.1.1-1
E-UTRA RF Channel Number		1	One FDD carrier frequency is used
Downlink Channel Bandwidth (BW _{channel})	MHz	10	For both cells in the test
CP length		Normal	For both cells in the test
DRX			OFF
Time offset between cells	μs	3	Synchronous cells
Physical cell ID DCI		(PCI _{cell1} - PCI _{cell2})mod6	Cell PCIs for Cell 1 and Cell 2 are selected
Physical cell ID PCI		!=0	randomly so that the condition is met
ABS pattern		'10000000100000001000 0000100000001000000	Non-MBSFN ABS. FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2. The first/leftmost bit corresponds to the subframe #0 of a radio frame satisfying SFN mod 40 = 0. No MBSFN subframes are cofigured in Cell 1 or Cell 2 during the ABS subframes of Cell 2.
Time-domain measurement resource restriction pattern for serving cell measurements		'1000000010000001000 00001000000010000000	Configured for measurements on Cell 1.

Table A.9.7.3.2-2: Cell-specific test parameters for FDD UE Rx–Tx time difference measurement under time-domain measurement resource restriction with non-MBSFN ABS

Parameter	Unit	Cell 1	Cell 2
E-UTRAN RF Channel Number		1	1
Channel bandwidth (BW _{channel})	MHz	10	10
PDSCH Reference measurement channel defined in A.3.1.1.1		R.0 FDD	N/A
PDSCH allocation	n_{PRB}	13—36	N/A
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.1		R.6 FDD	N/A
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD) and in A.3.2.1.6 (OP.6 FDD)		OP.5 FDD	OP.6 FDD
PBCH_RA	dB		
PBCH_RB	dB		
PSS_RA	dB		
SSS_RA	dB		
PCFICH_RB	dB		Non-ABS and
PHICH_RA	dB		ABS subframe
PHICH_RB	dB	0	channel powers
PDCCH_RA	dB		defined in Table
PDCCH_RB	dB		A.3.4.1.1-1.
PDSCH_RA	dB		
PDSCH_RB	dB		
OCNG_RA ^{Note1}	dB		
OCNG_RB ^{Note1}	dB		
N_{oc} Note 2	dBm/15 kHz	-98	-98
CRS \hat{E}_s/N_{oc}	dB	-3	1
CRS $(\hat{E}_s/I_{ot})_{meas}$ Note 3	dB	-3	-0.76
CRS $(\hat{E}_s/I_{ot})_{nonABS}$ Note 3	dB	-6.54	-0.76
RSRP Note 4	dBm/15 kHz	-101	-97
(Io) _{meas} Note 4	dBm/9 MHz	-67.89	-67.89
$(Io)_{nonABS}$ Note 4	dBm/9 MHz	-65.81	-65.81
Propagation condition		AV	VGN

NOTE 1: OCNG shall be used such that the resources in the active cell are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

NOTE 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for $N_{\it oc}$ to be fulfilled. Applies to all subframes.

Note 3: $(\hat{E}_s/I_{ot})_{meas}$ is calculated in CRS REs in the subframes indicated for PCell measurements by measurement resource restriction pattern, whilst $(\hat{E}_s/I_{ot})_{nonABS}$ is calculated in CRS REs in the subframes not indicated for PCell measurements by measurement resource restriction paattern.

Note 4: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. ${\rm (Io)}_{\it meas}$ is calculated in CRS symbols in the subframes indicated for PCell measurements by measurement resource restriction pattern, whilst ${\rm (Io)}_{\it nonABS}$ is calculated in CRS symbols in the subframes not indicated for PCell measurements by measurement resource restriction pattern.

Table A.9.7.3.2-3: Sounding Reference Symbol Configuration to be used in FDD UE Rx–Tx time difference test

Field	Value	Comment			
UL bandwidth	50 RBs	Same as the DL bandwidth			
srsBandwidthConfiguration	bw5				
srsSubframeConfiguration	sc1				
ackNackSrsSimultaneousTransmission	FALSE				
srsMaxUpPTS	N/A	Not applicable for FDD			
srsBandwidth	0	No hopping			
srsHoppingBandwidth	hbw0				
frequencyDomainPosition	0				
Duration	TRUE	Indefinite duration			
srs-ConfigIndex	0	SRS periodicity of 2ms			
transmissionComb	0				
cyclicShift	cs0	No cyclic shift			
srsAntennaPort	an1	Number of SRS antenna ports			
Note: For further information see clause 6.3.2 in TS 36.331.					

A.9.7.3.3 Test Requirements

The UE Rx-Tx time difference measurement accuracy shall fulfill the requirements in Section 9.1.9.3.

A.9.7.4 E-UTRAN TDD UE Rx-Tx Time Difference under Time-Domain Measurement Resource Restriction with Non-MBSFN ABS

A.9.7.4.1 Test Purpose and Environment

The purpose of this test is to verify that the TDD UE Rx-Tx time difference measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.9.3 when time-domain measurement resource restriction is configured for PCell measurements via higher-layer signalling [2] and non-MBSFN ABS are configured in the interfering cell.

A.9.7.4.2 Test Parameters

In the test, there are two synchronous cells, Cell 1 and Cell 2, on the same RF channel. Cell 1 is the PCell on which UE Rx-Tx is measured, and Cell 2 is the interfering cell. Non-MBSFN ABS pattern is configured in Cell 2 during the entire test.

The tested UE is connected to the PCell and configured to transmit SRS signals periodically. The SRS configuration is provided to the UE before the measurement starts. The UE is configured to report UE Rx–Tx time difference measurement. The test equipment measures the transmit timing of the UE using the transmitted SRS, and measures the receive timing using the downlink CRS. The test equipment then compares the difference of these two timings to the UE Rx-Tx measurement reported by the UE. The UE is configured by higher layers via Cell 1 with a time-domain measurement resource restriction pattern for performing E-UTRAN TDD UE Rx-Tx time difference measurements on PCell. The information for both patterns shall be provided to the UE before the measurement starts.

The general and cell-specific parameters for this test case are defined in Table A.9.7.4.2-1 and Table A.9.7.4.2-2, respectively, and the SRS configuration used is defined in Table A.9.7.4.2-3.

Table A.9.7.4.2-1: General test parameters for E-UTRAN TDD UE Rx-Tx time difference measurement under time-domain measurement resource restriction with non-MBSFN ABS

Parameter	Unit	Value	Comment
Serving cell (PCell)		Cell 1	Cell to be measured
Neighbour cell		Cell 2	The cell interfering to Cell 1
PCell ABS configuration		Non-MBSFN ABS	As defined in Table A.3.4.1.1-1
E-UTRA RF Channel Number		1	One TDD carrier frequency is used
Downlink Channel Bandwidth (BW _{channel})	MHz	10	For both cells in the test
CP length		Normal	For both cells in the test
Special subframe configuration		6	For Cell 1 and Cell 2. For special subframe configurations see Table 4.2-1 in [16].
Uplink/downlink subframe configuration		1	For Cell 1 and Cell 2. For uplink-downlink subframe configurations see Table 4.2-2 in [16].
DRX			OFF
Time offset between cells	μs	3	Synchronous cells
Physical cell ID PCI		(PCI _{cell1} - PCI _{cell2})mod6 !=0	Cell PCIs for Cell 1 and Cell 2 are selected randomly so that the condition is met.
ABS pattern		'00000000010000000001'	Non-MBSFN ABS. TDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. Configured in Cell 2. The first/leftmost bit corresponds to the subframe #0 of a radio frame satisfying SFN mod 20 = 0. No MBSFN subframes are cofigured in the ABS subframes in Cell 2.
Time-domain measurement resource restriction pattern for serving cell measurements		'000000001000000001'	Configured for measurements on Cell 1.

Table A.9.7.4.2-2: Cell-specific test parameters for E-UTRAN TDD UE Rx-Tx time difference measurement under time-domain measurement resource restriction with non-MBSFN ABS

$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Parameter	Unit	Cell 1	Cell 2		
PDECCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.2 R.6 TDD R.6 TDD DCNG Patterns defined in A.3.2.2.1 (OP.1 TDD) in A.3.2.2.2 (OP.2 TDD) OP.1 TDD OP.1 TDD PBCH_RB dB OP.1 TDD OP.2 TDD PBCH_RB dB OP.2 TDD OP.2 TDD PBCH_RB dB OP.2 TDD OP.2 TDD PBCH_RB dB OP.2 TDD OP.2 TDD PBCH_RB dB OP.2 TDD OP.2 TDD PBCH_RB dB OB.2 TDD OP.2 TDD PBCH_RB dB OB.2 TDD OP.2 TDD PBCH_RB dB OB.2 TDD OP.2 TDD PDCH_RB dB OB.2 TDD OP.2 TDD PDCCH_RB dB OB.2 TDD OP.2 T	PDSCH Reference measurement channel defined in A.3.1.1.2		R.0 TDD	N/A		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PDSCH allocation	n_{PRB}	13—36	N/A		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.2		R.6 TDD	R.6 TDD		
PBCH_RB dB PSS_RA dB PSS_RA dB PSS_RA dB PSS_RA dB PSS_RA dB PSS_RA dB PHICH_RB dB PHICH_RB dB PDCCH_RB dB PDCCH_RB dB PDSCH_RB dB PDSCH_RB dB PDCNIG_RBNote1 dB POCNIG_RRNote1 dB POCNIG_RNOTE1 dB POCNIG_RNOTE1 dB POCNIG_RNOTE1 dB POCNIG_RNOTE2 dB PS -98	OCNG Patterns defined in A.3.2.2.1 (OP.1 TDD) and A.3.2.2.2 (OP.2 TDD)			OP.2 TDD		
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	PBCH_RA	dB				
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	PBCH_RB	dB				
PCFICH_RB dB PHICH_RA dB PHICH_RB dB PDCCH_RB dB PDCCH_RB dB PDSCH_RB dB POSCH_RB dB POSCH_RB dB POSCH_RB -98 POSCH_RB -98 POSC	PSS_RA	dB				
PHICH_RA dB dB PHICH_RA dB dB PHICH_RB dB dB PDCCH_RA dB dB PDCCH_RB dB dB PDSCH_RB dB dB PDSCH_RB dB DCNG_RA^{Note1} DCNG_RB^{Note1} dB DCNG_RB^{Note2} DCNG_RB^{Note2} dB M/15 HZ CRS (\hat{E}_s/N_{oc}) dB -3 1 CRS $(\hat{E}_s/I_{ot})_{meas}$ dB -3 -0.76 CRS $(\hat{E}_s/I_{ot})_{monABS}$ dB -6.54 -0.76 CRS $(\hat{E}_s/I_{ot})_{monABS}$ dB -6.54 -0.76 CRS $(\hat{E}_s/N_{oc})_{monABS}$ dB -6.54 -67.89 $(Io)_{meas}^{Note 4}$ dBm/9 HZ -67.89 -67.89 $(Io)_{monABS}^{Note 4}$ dBm/9 HZ -65.81 -65.81	SSS_RA	dB	1			
PHICH_RB PDCCH_RA PDCCH_RA PDCCH_RB PDSCH_RB PDSCH_RA PDSCH_RA PDSCH_RB PD	PCFICH_RB	dB	1			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PHICH_RA	dB	1			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PHICH_RB	dB	0			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PDCCH_RA	dB		powers defined in Table A.3.4.1.1-1.		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PDCCH_RB					
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PDSCH_RA	dB				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	PDSCH_RB					
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	OCNG_RA ^{Note1}	dB	1			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			1			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	N_{oc}^{-} Note2	dBm/15	-98	-98		
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	${ m CRS}\hat{E}_s/N_{oc}$	dB	-3	1		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	CRS $(\hat{E}_s/I_{ot})_{meas}^{}$ Note 3	dB	-3	-0.76		
$ \frac{\text{dBm/15}}{\text{kHz}} -101 $	CRS $(\hat{E}_s/I_{ot})_{nonABS}^{Note 3}$	dB	-6.54	-0.76		
$(IO)_{meas}$ MHz -67.89 -67.89 $(IO)_{nonABS}$ $^{Note 4}$ $dBm/9$ $_{MHz}$ -65.81 -65.81	RSRP Note 4		-101	-97		
MHz -65.81 -65.81	$({ m Io})_{meas}^{ m Note~4}$		-67.89	-67.89		
	(Io) _{nonABS} Note 4		-65.81	-65.81		
Propagation Condition AWGN	Propagation Condition			AWGN		

Note 1: OCNG shall be used such that the resources in the active cell are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modeled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: $(\hat{E}_s/I_{ot})_{meas}$ is calculated in CRS REs in the subframes indicated for PCell measurements by measurement resource restriction pattern, whilst $(\hat{E}_s/I_{ot})_{nonABS}$ is calculated in CRS REs in the subframes not indicated for PCell measurements by measurement resource restriction paattern.

Note 4: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable

Note 4: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. $(Io)_{meas}$ is calculated in CRS symbols in the subframes indicated for PCell measurements by measurement resource restriction pattern, whilst $(Io)_{nonABS}$ is calculated in CRS symbols

Table A.9.7.4.2-3: Sounding Reference Symbol Configuration to be used in TDD UE Rx–Tx time difference test

Field	Value	Comment
UL bandwidth	50 RBs	Same as the DL bandwidth
srsBandwidthConfiguration	bw5	
srsSubframeConfiguration	sc1	
ackNackSrsSimultaneousTransmission	FALSE	
srsMaxUpPTS	TRUE	
srsBandwidth	0	No hopping
srsHoppingBandwidth	hbw0	
frequencyDomainPosition	0	
Duration	TRUE	Indefinite duration
Srs-ConfigurationIndex	10	SRS periodicity of 10ms for all Tests.
transmissionComb	0	12000
cyclicShift	cs0	No cyclic shift
SRS-AntennaPort	an1	Number of antenna ports used for SRS transmission
Note: For further information see clause	6.3.2 in TS 36.331.	io. c. c. and modern

A.9.7.4.3 Test Requirements

The UE Rx-Tx time difference measurement accuracy shall fulfill the requirements in Section 9.1.9.3.

A.9.7.5 E-UTRAN FDD UE Rx–Tx time difference under Time Domain Measurement Resource Restriction with CRS Assistance Information and Non-MBSFN ABS

A.9.7.5.1 Test Purpose and Environment

The purpose of this test is to verify that the E-UTRAN FDD UE Rx-Tx time difference measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.9.4 when the UE is provided with a time-domain measurement resource restriction pattern and CRS assistance information, and when non-MBSFN ABS configured in the interfering cells.

A.9.7.5.2 Test parameters

In this test case, there are three synchronous cells, Cell 1, Cell 2 and Cell 3, on the same RF channel. Cell 1 is the PCell on which UE Rx-Tx is measured. Cell 2 and Cell 3 are the interfering cells. A non-MBSFN ABS pattern is configured in each of the Cell 2 and Cell 3 during the entire test.

The tested UE is connected to the PCell and configured to transmit SRS signals periodically. The SRS configuration is provided to the UE before the measurement starts. The UE is configured to report UE Rx–Tx time difference measurement. The test equipment measures the transmit timing of the UE using the transmitted SRS, and measures the receive timing using the downlink CRS. The test equipment then compares the difference of these two timings to the UE Rx-Tx measurement reported by the UE. The UE is configured by higher layers via Cell 1 with a time-domain measurement resource restriction pattern for performing E-UTRAN FDD intra-frequency measurements on PCell. The UE is also provided via higher layers with the CRS assistance information for Cell 2. The information for both measurement patterns and the CRS assistance information shall be provided via RRC to the UE before the measurement starts

The general and cell-specific parameters for this test case are defined in Table A.9.7.5.2-1 and Table A.9.7.5.2-2, respectively, and the SRS configuration used is specified in Table A.9.7.5.2-3.

Table A.9.7.5.2-1: General test parameters for FDD UE Rx–Tx time difference measurement under time-domain measurement resource restriction with CRS assistance information and non-MBSFN ABS

Parameter		Unit	Value	Comment		
Serving cell (PC	Serving cell (PCell)		Cell 1	The measured cell		
Neighbour cell	Neighbour cell		Cell 2 and Cell 3	Cell 2 is the first interfering cell to Cell 1, whilst		
				Cell 3 is the second interfering cell to Cell 1.		
ABS transmission			Non-MBSFN ABS	As defined in Table A.3.4.1.1-1		
E-UTRA RF Cha			1	One FDD carrier frequency is used		
Downlink Chann	nel Bandwidth	MHz	10	For all cells in the test		
(BW _{channel})						
CP length			Normal	For all cells in the test		
DRX				OFF		
		μs	Cell 2 offset with respect	Three synchronous cells		
Time offset betw	een cells		to Cell 1: 3			
Time one bott	70011 00110		Cell 3 offset with respect			
			to Cell 1: 2			
			(PCI _{cell1} - PCI _{cell2})mod6	Cell PCIs are selected so that both conditions		
Physical cell ID	PCI		=0	are met		
,	-		(PCI _{cell1} - PCI _{cell3})mod6			
			!=0	AL ARDOEN AROUND AROUN A CUE		
			10000000100000001000	Non-MBSFN ABS. FDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54.		
			000010000001000000000000000000000000000	The first/leftmost bit corresponds to the Pcell		
			00001000000010000000	subframe #0 of a radio frame satisfying SFN		
ABS pattern				mod x = 0, where x is the size of the bit string		
				(40) divided by 10. No MBSFN subframes are		
				configured in the ABS subframes. Configured in		
				Cell 2 and Cell 3 during the testing.		
Time-domain me	Time-domain measurement		'100000010000001000	and the state of t		
	resource restriction pattern for		00001000000010000000	Configured for measurements on Cell 1.		
	PCell measurements					
physCellId			see PCI conditions above	The CDC againstones information is provided for		
CBS	CRS antennaPortsC		1	The CRS assistance information is provided for Cell 2 and Cell 3 in CRS-AssistanceInfo. It		
assistance ount			<u> </u>	includes a single MBSFN-SubframeConfig		
information	mbsfn-			element with subframe allocation one		
IIIIOIIIIalioii	SubframeConfi		oneFrame = '000000'	Frame='000000'.		
	gList			1 Tame= 000000 .		

Table A.9.7.5.2-2: Cell-specific test parameters for FDD UE Rx–Tx time difference measurement under time-domain measurement resource restriction with CRS assistance information and non-MBSFN ARS

Parameter	Unit	Cell 1	Cell 2	Cell 3	
E-UTRAN RF Channel Number		1	1	1	
PDSCH Reference measurement channel defined in A.3.1.1.1		R.0 FDD	N/A	N/A	
PDSCH allocation	n_{PRB}	13—36	N/A	N/A	
PDCCH/PCFICH/PHICH Reference measurement channel defined in A.3.1.2.1		R.6 FDD	N/A	N/A	
OCNG Patterns defined in A.3.2.1.5 (OP.5 FDD) and in A.3.2.1.6 (OP.6 FDD)		OP.5 FDD	OP.6 FDD OP.6 FD		
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB		Non-ABS and ABS subframe channel powers defined in Tab A.3.4.1.1-1.		
PHICH_RA	dB				
PHICH_RB	dB	0			
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note1}	dB				
OCNG_RB ^{Note1}	dB				
$N_{oc}^{ m Note 2}$	dBm/15 kHz	-98	-98	-98	
${ m CRS}\hat{E}_s/N_{oc}$	dB	-3	3	1	
CRS $(\hat{E}_s/I_{ot})_{meas}$ Note 3	dB	-7.76	1.24	-0.76	
CRS $(\hat{E}_s/I_{ot})_{nonABS}$ Note 3	dB	-9.29	-1.41	-4.44	
RSRP Note 4	dBm/15 kHz	-101	-95	-97	
(Io) _{meas} Note 4	dBm/9 MHz	-67.11	-67.11	-67.11	
(Io) _{nonABS} Note 4	dBm/9 MHz	-63.45	-63.45	-63.45	
Propagation condition			AWGN	•	

NOTE 1: OCNG shall be used such that the resources in the active cell are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

NOTE 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled. Applies to all subframes.

Note 3: $(\hat{E}_s/I_{ot})_{meas}$ is calculated in CRS REs in the subframes indicated for PCell measurements by measurement resource restriction pattern, whilst $(\hat{E}_s/I_{ot})_{nonABS}$ is calculated in CRS REs in the subframes not indicated for PCell measurements by measurement resource restriction paattern.

Note 4: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. $(Io)_{meas}$ is calculated in CRS symbols in the subframes indicated for PCell measurements by measurement resource restriction pattern, whilst $(Io)_{nonABS}$ is calculated in CRS symbols in the subframes not indicated for PCell measurements by measurement resource restriction pattern.

Table A.9.7.5.2-3: Sounding Reference Symbol Configuration to be used in FDD UE Rx–Tx time difference test

Field	Value	Comment					
UL bandwidth	50 RBs	Same as the DL bandwidth					
srsBandwidthConfiguration	bw5						
srsSubframeConfiguration	sc1						
ackNackSrsSimultaneousTransmission	FALSE						
srsMaxUpPTS	N/A	Not applicable for FDD					
srsBandwidth	0	No hopping					
srsHoppingBandwidth	hbw0						
frequencyDomainPosition	0						
Duration	TRUE	Indefinite duration					
srs-ConfigIndex	0	SRS periodicity of 2ms					
transmissionComb	0						
cyclicShift	cs0	No cyclic shift					
srsAntennaPort	an1	Number of SRS antenna ports					
Note: For further information see clause 6.3.2 in TS 36.331.							

A.9.7.5.3 Test Requirements

The UE Rx-Tx time difference measurement accuracy shall fulfill the requirements in Section 9.1.9.4.

A.9.7.6 E-UTRAN TDD UE Rx-Tx Time Difference under Time-Domain Measurement Resource Restriction with CRS Assistance Information and Non-MBSFN ABS

A.9.7.6.1 Test Purpose and Environment

The purpose of this test is to verify that the E-UTRAN TDD UE Rx-Tx time difference measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.9.4 when the UE is provided with a time-domain measurement resource restriction pattern and CRS assistance information, and when non-MBSFN ABS configured in the interfering cells.

A.9.7.6.2 Test Parameters

In this test case, there are three synchronous cells, Cell 1, Cell 2 and Cell 3, on the same RF channel. Cell 1 is the PCell on which UE Rx-Tx is measured. Cell 2 and Cell 3 are the interfering cells. A non-MBSFN ABS pattern is configured in each of the Cell 2 and Cell 3 during the entire test.

The tested UE is connected to the PCell and configured to transmit SRS signals periodically. The SRS configuration is provided to the UE before the measurement starts. The UE is configured to report UE Rx–Tx time difference measurement. The test equipment measures the transmit timing of the UE using the transmitted SRS, and measures the receive timing using the downlink CRS. The test equipment then compares the difference of these two timings to the UE Rx-Tx measurement reported by the UE. The UE is configured by higher layers via Cell 1 with a time-domain measurement resource restriction pattern for performing E-UTRAN TDD intra-frequency measurements on PCell. The UE is also provided via higher layers with the CRS assistance information for Cell 2. The information for both measurement patterns and the CRS assistance information shall be provided via RRC to the UE before the measurement starts.

The general and cell-specific parameters for this test case are defined in Table A.9.7.6.2-1 and Table A.9.7.6.2-2, respectively, and the SRS configuration used is specified in Table A.9.7.6.2-3.

Table A.9.7.6.2-1: General test parameters for E-UTRAN TDD UE Rx-Tx time difference measurement under time-domain measurement resource restriction with CRS assistance information and non-MBSFN ABS

Parameter	Unit	Value	Comment
Serving cell (PCell)		Cell 1	Cell to be measured
Neighbour cell		Cell 2 and Cell 3	Cell 2 is the first interfering cell to Cell 1, whilst
			Cell 3 is the second interfering cell to Cell 1.
ABS transmission configuration	n	Non-MBSFN ABS	As defined in Table A.3.4.1.1-1
E-UTRA RF Channel Number		1	One TDD carrier frequency is used
Downlink Channel Bandwidth	MHz	10	For all cells in the test
(BW _{channel})			
CP length		Normal	For all cells in the test
Special subframe configuration	1	6	For all cells in the test. For special subframe configurations see Table 4.2-1 in [16].
Uplink/downlink subframe		1	For all cells in the test. For uplink-downlink
configuration			subframe configurations see Table 4.2-2 in [16].
DRX			OFF
Time offset between cells	μs	Cell 2 offset with respect to Cell 1: 3 Cell 3 offset with respect to Cell 1: 2	Three synchronous cells
Physical cell ID PCI		(PCI _{cell1} - PCI _{cell2})mod6 =0 (PCI _{cell1} - PCI _{cell3})mod6 !=0	Cell PCIs are selected so that both conditions are met
ABS pattern		'000000001000000001'	Non-MBSFN ABS. TDD ABS Pattern Info IE, as defined in TS 36.423 [28], clause 9.2.54. The first/leftmost bit corresponds to the Pcell subframe #0 of a radio frame satisfying SFN mod x = 0, where x is the size of the bit string (20) divided by 10. No MBSFN subframes are configured in the ABS subframes. Configured in Cell 2 and Cell 3 during the testing.
Time-domain measurement resource restriction pattern for serving cell measurements		'0000000010000000001'	Configured for measurements on Cell 1.
CRS assistance physCellId antennaPort ount	sC	see PCI conditions above	The CRS assistance information is provided for Cell 2 and Cell 3 in CRS-AssistanceInfo. It includes a single MBSFN-SubframeConfig
information mbsfn- SubframeCo gList	nfi	oneFrame = '000000'	element with subframe allocation one Frame='000000'.

Table A.9.7.6.2-2: Cell-specific test parameters for E-UTRAN TDD UE Rx-Tx time difference measurement under time-domain measurement resource restriction with CRS assistance information and non-MBSFN ABS

Parameter	Unit	Cell 1	Cell 2	Cell 3	
E-UTRAN RF Channel Number		1	1	1	
PDSCH Reference measurement channel		R.0 TDD	N/A	N/A	
defined in A.3.1.1.2		11.0 100	IN/A	11/7	
PDSCH allocation	n_{PRB}	13—36	N/A	N/A	
PDCCH/PCFICH/PHICH Reference		R.6 TDD	N/A	N/A	
measurement channel defined in A.3.1.2.2		11.0 100	IN/A	111/74	
OCNG Patterns defined in A.3.2.2.1 (OP.1		OP.1 TDD	OP.2 TDD	OP.2 TDD	
TDD) and A.3.2.2.2 (OP.2 TDD)		0111100	01.2.100	01.2122	
PBCH_RA	dB				
PBCH_RB	dB				
PSS_RA	dB				
SSS_RA	dB				
PCFICH_RB	dB				
PHICH_RA	dB		Non-ABS and	ABS subframe	
PHICH_RB	dB	0	channel powers defined in Tal A.3.4.1.1-1.		
PDCCH_RA	dB				
PDCCH_RB	dB				
PDSCH_RA	dB				
PDSCH_RB	dB				
OCNG_RA ^{Note1}	dB				
OCNG_RB ^{Note1}	dB				
$N_{oc}^{$	dBm/15 kHz	-98	-98	-98	
CRS \hat{E}_s/N_{oc}	dB	-3	3	1	
CRS $(\hat{E}_s/I_{ot})_{meas}$ Note 3	dB	-7.76	1.24	-0.76	
CRS $(\hat{E}_s/I_{ot})_{nonABS}$ Note 3	dB	-9.29	-1.41 -4.44		
RSRP Note 4	dBm/15 kHz	-101	-95	-97	
${ m (Io)}_{meas}^{ m Note~4}$	dBm/9 MHz	-67.11	-67.11	-67.11	
(Io) _{nonABS} Note 4	dBm/9 MHz	-63.45	-63.45	-63.45	
Propagation Condition			AWGN		

Note 1: OCNG shall be used such that the resources in the active cell are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modeled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: $(\hat{E}_s/I_{ot})_{meas}$ is calculated in CRS REs in the subframes indicated for PCell measurements by measurement resource restriction pattern, whilst $(\hat{E}_s/I_{ot})_{nonABS}$ is calculated in CRS REs in the subframes not indicated for PCell measurements by measurement resource restriction paattern.

Note 4: RSRP and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves. $(Io)_{meas}$ is calculated in CRS symbols in the subframes indicated for PCell measurements by measurement resource restriction pattern, whilst $(Io)_{nonABS}$ is calculated in CRS symbols

Table A.9.7.6.2-3: Sounding Reference Symbol Configuration to be used in TDD UE Rx–Tx time difference test

Field	Value	Comment
UL bandwidth	50 RBs	Same as the DL bandwidth
srsBandwidthConfiguration	bw5	
srsSubframeConfiguration	sc1	
ackNackSrsSimultaneousTransmission	FALSE	
srsMaxUpPTS	TRUE	
srsBandwidth	0	No hopping
srsHoppingBandwidth	hbw0	
frequencyDomainPosition	0	
Duration	TRUE	Indefinite duration
Srs-ConfigurationIndex	10	SRS periodicity of 10ms for all Tests.
transmissionComb	0	10000
cyclicShift	cs0	No cyclic shift
SRS-AntennaPort	an1	Number of antenna ports used for SRS transmission
Note: For further information see clause	6.3.2 in TS 36.331.	•

A.9.7.6.3 Test Requirements

The UE Rx-Tx time difference measurement accuracy shall fulfill the requirements in Section 9.1.9.4.

A.9.8 RSTD

A.9.8.1 E-UTRAN FDD RSTD intra frequency case

A.9.8.1.1 Test Purpose and Environment

The purpose of this test is to verify that the RSTD intra-frequency measurement accuracy is within the specified limits in clause 9.1.10.1 in AWGN channels.

In the test, there are two synchronous cells, Cell 1 as the reference cell and Cell 2 as the neighbour cell on the same frequency.

The OTDOA assistance data as defined in TS 36.355, Clause 6.5.1, shall be provided to the UE before the measurement period. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of measurement period, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data.

A time span of $T_{RSTD\ IntraFreqFDD,\ E-UTRAN}$ is provided for the measurement period, and PRS are configured according to I_{PRS} in Tables A.9.8.1.1-1 and A.9.8.1.1-2 during this time.

The test parameters are given in Table A.9.8.1.1-1 and Table A.9.8.1.1-2.

Table A.9.8.1.1-1: General Test Parameters for intra frequency RSTD Tests for E-UTRAN FDD

Parameter	Unit		Va		Comment	
		Test1	Test2	Test3	Test4	
PCFICH/PDCCH/PHICH parameters		R.8	FDD	R.6 FDD		As specified in clause A.3.1.2.1
OCNG Patterns defined in A.3.2.1		OP.7 FDD OP.6 FDD		OP.7 FDD		OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes).
Reference cell				II 1		
Neighbour cell				1 2		0 500
E-UTRA RF Channel Number				1		One FDD carrier frequency is used.
Channel Bandwidth (BW _{channel})	MHz	1	.4	1	0	
PRS Bandwidth	RB	(6	5	0	PRS bandwidth is as indicated in <i>prs-Bandwidth</i> in the OTDOA assistance data defined in [24].
PRS configuration Index I_{PRS}		12 2				As defined in TS 36.211
Number of consecutive positioning downlink subframes $N_{\rm PRS}$		6 1				As defined in TS 36.211
prs-MutingInfo				1110000' 1110000'		See clause 6.5.1.2 in TS 36.355 for more information
Cell ID		(Cell ID of cell 1 – Cell ID of cell 2) mod 6 = 0	(Cell ID of cell 1 – Cell ID of cell 2) mod 6 = 1	(Cell ID of cell 1 – Cell ID of cell 2) mod 6 = 0	(Cell ID of cell 1 – Cell ID of cell 2) mod 6 = 3	
expectedRSTD	us	Cell 2: 1 Other neighbour cells: randomly between -3 and 3	Cell 2: -1 Other neighbour cells: randomly between -3 and 3	Cell 2: -1 Other neighbour cells: randomly between -3 and 3	Cell 2: 1 Other neighbour cells: randomly between -3 and 3	
expectedRSTDUncertainty for all neighbour cells	us	5	5	5	5	
CP length			Nor			
DRX			0			
Radio frame receive time offset between the cells at the UE antenna connector	us	Cell 2 to Cell 1: -3			Cell 2 to Cell 1: -3	PRS are transmitted from synchronous cells
Number of cells provided in OTDOA assistance data			1	The number of cells includes the reference cell		
T _{RSTD} IntraFreqFDD, E-UTRAN	ms		25	Derived according to the RSTD measurement requirements specified in Clause 8.1.2.5.1		

Table A.9.8.1.1-2: Cell Specific Test Parameters for intra frequency RSTD Tests for E-UTRAN FDD

Parameter	Unit	Te	st1	Test2 Test3		Test4			
Farailleter	Unit	Cell1	Cell2	Cell1	Cell2	Cell1	Cell2	Cell1	Cell2
E-UTRA RF Channel					1				
Number					ı				
PBCH_RA									
PBCH_RB									
PSS_RA									
SSS_RA									
PCFICH_RB									
PHICH_RA	dB	0	0	0	0	0	0	0	0
PHICH_RB									
PDCCH_RA									
PDCCH_RB									
OCNG_RA ^{Note1}									
OCNG_RB ^{Note1}									
PRS_RA	dB	0	0	-3	0	0	0	-3	0
$N_{oc}^{ m Note2}$	dBm/15 kHz	-98	-98	-98	-98	-98	-98	-98	-98
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{oc}$	dB	-2.37	-8.02	-6	-13	-2.37	-8.02	-6	-13
PRS $\hat{E}_{_{s}}/I_{_{ot}}$ Note3	dB	-3	-10	-6	-13	-3	-10	-6	-13
lo Note3	dBm/1.08 MHz	-78.92	-78.92	-79.21	-79.21	N/A	N/A	N/A	N/A
	dBm/9 MHz	N/A	N/A	N/A	N/A	-69.72	-69.72	-70	-70
PRP Note3	dBm/15kHz	-100.37	-106.02	-104	-111	-100.37	-106.02	-104	-111
$\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}^{\mathrm{Note 3}}$	dB	-2.37	-8.02	-3	-13	-2.37	-8.02	-3	-13
RSRP Note 3	dBm/15kHz	-100.37	-106.02	-101	-111	-100.37	-106.02	-101	-111
Propagation condition	AWGN								
Note 1: OCNG shall									

y is achieved for all OFDM symbols (other than those in the PRS subframes).

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

 \hat{E}_s/N_{ac} , PRS \hat{E}_s/I_{ct} , Io, RSRP and PRP levels have been derived from other parameters for information Note 3: purposes. They are not settable parameters themselves. Io values are derived in the case that there is no PBCH, PSS or SSS in the OFDM symbols carrying PRS

A.9.8.1.2 **Test Requirements**

The RSTD measurement accuracy shall fulfill the requirements in clause 9.1.10.1.

A.9.8.2 E-UTRAN TDD RSTD intra frequency case

A.9.8.2.1 Test Purpose and Environment

The purpose of this test is to verify that the RSTD intra-frequency measurement accuracy is within the specified limits in clause 9.1.10.1 in AWGN channels.

In the test, there are two synchronous cells, Cell 1 as the reference cell and Cell 2 as the neighbour cell on the same frequency.

The OTDOA assistance data as defined in TS 36.355, Clause 6.5.1, shall be provided to the UE before the measurement period. The last TTI containing the OTDOA assistance data shall be provided to the UE Δ T ms before the start of measurement period, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data.

A time span of $T_{RSTD\ IntraFreqTDD,\ E-UTRAN}$ is provided for the measurement period, and PRS are configured according to I_{PRS} in Tables A.9.8.2.1-1 and A.9.8.2.1-2 during this time.

The test parameters are given in Table A.9.8.2.1-1 and Table A.9.8.2.1-2.

Table A.9.8.2.1-1: General Test Parameters for intra frequency RSTD Tests for E-UTRAN TDD

Parameter	Unit		Va	Comment			
		Test1	Test2	Test3	Test4		
PCFICH/PDCCH/PHICH parameters		R.8	R.8 TDD		TDD	As specified in clause A.3.1.2.2	
OCNG Patterns defined in A.3.2.2			OP.4 TDD OP.2 TDD		OP.4 TDD		OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes).
Reference cell Neighbour cell		Cell 1 Cell 2					
E-UTRA RF Channel		Cell 2		1		One TDD carrier	
Number Channel Bandwidth				' 		frequency is used.	
(BW _{channel})	MHz	1	.4	1	0		
PRS Bandwidth	RB	6	6	5	0	PRS bandwidth is as indicated in <i>prs-Bandwidth</i> in the OTDOA assistance data defined in [24].	
Special subframe configuration		6		6		As specified in table 4.2-1 in TS 36.211. The same configuration in both cells.	
Uplink-downlink configuration		3		1		As specified in table 4.2-2 in TS 36.211 and table 8.1.2.5.2-2. The same configuration in both cells.	
PRS configuration Index I_{PRS}		Ç	9	1	4	As defined in TS 36.211	
Number of consecutive positioning downlink subframes N_{PRS}		6	6	,	1	As defined in TS 36.211	
prs-MutingInfo		Cell 1: '11110	Cell 2: '1	1110000'		See clause 6.5.1.2 in TS 36.355 for more information	
Cell ID		(Cell ID of cell 1 – Cell ID of cell 2) mod 6 = 0	(Cell ID of cell 1 – Cell ID of cell 2) mod 6 = 1	(Cell ID of cell 1 – Cell ID of cell 2) mod 6 = 0	(Cell ID of cell 1 – Cell ID of cell 2) mod 6 = 3		
expectedRSTD	us	Cell 2: 1 Other neighbour cells: randomly between -3 and 3	Cell 2: -1 Other neighbour cells: randomly between -3 and 3	Cell 2: -1 Other neighbour cells: randomly between -3 and 3	Cell 2: 1 Other neighbour cells: randomly between -3 and 3		
expectedRSTDUncertainty for all neighbour cells	us	5	5	5 5			
CP length			Noi	mal			
DRX		OFF	T =	T =	T =		
Radio frame receive time offset between the cells at the UE antenna connector	us	Cell 2 to Cell 1: -3	Cell 2 to Cell 1: 3	Cell 2 to Cell 1: 3	Cell 2 to Cell 1: -3	PRS are transmitted from synchronous cells	
Number of cells provided in OTDOA assistance data			1	6		The number of cells includes the reference cell	

$T_{ m RSTD~IntraFreqTDD,E-UTRAN}$	ms	2560	Derived according to the RSTD measurement requirements specified in Clause 8.1.2.5.2
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Table A.9.8.2.1-2: Cell Specific Test Parameters for intra frequency RSTD Tests for E-UTRAN TDD

Parameter	Unit	Test1		Test2		Test3		Test4	
	Offic	Cell1	Cell2	Cell1	Cell2	Cell1	Cell2	Cell1	Cell2
E-UTRA RF Channel					1				
Number									
PBCH_RA									
PBCH_RB									
PSS_RA									
SSS_RA									
PCFICH_RB									
PHICH_RA	dB	0	0	0	0	0	0	0	0
PHICH_RB									
PDCCH_RA									
PDCCH_RB									
OCNG_RA ^{Note1}									
OCNG_RB ^{Note1}									
PRS_RA	dB	0	0	-3	0	0	0	-3	0
$N_{_{oc}}^{ m Note2}$	dBm/15 kHz	-98	-98	-98	-98	-98	-98	-98	-98
PRS $\hat{\mathrm{E}}_{\mathrm{s}}/N_{\mathit{oc}}$	dB	-2.37	-8.02	-6	-13	-2.37	-8.02	-6	-13
PRS $\hat{E}_{_{s}}/I_{_{ot}}^{}$ Note3	dB	-3	-10	-6	-13	-3	-10	-6	-13
lo Note3	dBm/1.08 MHz	-78.92	-78.92	-79.21	-79.21	N/A	N/A	N/A	N/A
	dBm/9 MHz	N/A	N/A	N/A	N/A	-69.72	-69.72	-70	-70
PRP Note3	dBm/15kHz	-100.37	-106.02	-104	-111	-100.37	-106.02	-104	-111
${ m \hat{E}}_{ m s}/N_{oc}^{ m Note~3}$	dB	-2.37	-8.02	-3	-13	-2.37	-8.02	-3	-13
RSRP Note 3	dBm/15kHz	-100.37	-106.02	-101	-111	-100.37	-106.02	-101	-111
Propagation condition		AWGN							

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes).

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 3: \hat{E}_s/N_{oc} , PRS \hat{E}_s/I_{ot} , Io, RSRP and PRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io values are derived in the case that there is no PBCH, PSS or SSS in the OFDM symbols carrying PRS.

A.9.8.2.2 Test Requirements

The RSTD measurement accuracy shall fulfill the requirements in clause 9.1.10.1.

A.9.8.3 E-UTRAN FDD-FDD RSTD inter frequency case

A.9.8.3.1 Test Purpose and Environment

The purpose of these tests is to verify that the RSTD inter-frequency measurement accuracy is within the specified limits in clause 9.1.10.2 in AWGN channels.

There are two synchronous cells on different carrier frequencies in the test. In all test cases, Cell 1 is the reference cell as well as the PCell and Cell 2 the neighbor cell. The inter frequency measurements on Cell 2 are supported by measurement gaps. PCIs of the two cells are selected randomly.

The OTDOA assistance data as defined in TS 36.355, Clause 6.5.1, shall be provided to the UE before the measurement period. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of measurement period, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data. The measurement gap configuration is known and configured in the UE before the measurements start.

There is no PDSCH allocated in the subframe transmitting PRS. A time span of $T_{RSTD\ InterFreqFDD,\ E-UTRAN}$ is provided for the measurement period, and PRS are configured according to I_{PRS} in Table A.9.8.3.1-1 and Table A.9.8.3.1-2 for each of the two cells during this time.

The test parameters are given in Table A.9.8.3.1-1 and Table A.9.8.3.1-2.

Table A.9.8.3.1-1: General Test Parameters for inter frequency RSTD Tests for E-UTRAN FDD

Parameter	Unit	Value		Comment			
		Test1 Test2					
PCFICH/PDCCH/PHICH parameters		R.8 FDD	R.6 FDD	As specified in clause A.3.1.2.1			
OCNG Patterns defined in A.3.2.1		OP.7 OP.6 FDD		OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes).			
Reference cell		Cell 1		Cell 1 on RF channel number 1			
Neighbour cell		Cell 2		Cell 2 on RF channel number 2			
E-UTRA RF Channel Number		1,2		Two FDD carrier frequencies are used.			
Channel Bandwidth (BW _{channel})	MHz	1.4	10	·			
PRS Bandwidth	RB	6	50	PRS bandwidth is as indicated in <i>prs-Bandwidth</i> in the OTDOA assistance data defined in [24].			
Number of consecutive positioning downlink subframes N_{PRS}		6	1	As defined in TS 36.211			
prs-MutingInfo		Cell1:'11110000' Cell2:'11110000'		See clause 6.5.1.2 in TS 36.355 for more information			
expectedRSTD	μs	Cell 2:1 Other neighbour cells: randomly between -3 and 3		The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator			
expectedRSTDUncertainty for all neighbour cells	μs	5		The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD-Uncertainty index			
CP length		Normal					
DRX		OFF					
Radio frame transmit time offset between the cells at the UE antenna connector	μs	Cell 2 to Cell 1: 3	Cell 2 to Cell 1: -3	Synchronous cells			
Number of cells provided in OTDOA assistance data		16		The list includes the reference cell (received in OTDOA-ReferenceCellInfo [24]) on RF channel 1 and 15 other cells on RF channel 2, all received in OTDOA-ProvideAssistanceData [24].			
$T_{ m RSTD\ InterFreqFDD,E-UTRAN}$	ms	5120		Derived according to the RSTD measurement requirements specified in Clause 8.1.2.6.1			

Table A.9.8.3.1-2: Cell Specific Test Parameters for inter frequency RSTD Tests for E-UTRAN FDD

Parameter	Unit	Te	st1	Test2		
Parameter	Unit	Cell1	Cell2	Cell1	Cell2	
E-UTRA RF Channel Number		1	2	1	2	
GapOffset		18	N/A	11	N/A	
Gap Pattern ID		0	N/A	0	N/A	
PRS configuration Index I_{PRS}		12	19	2	12	
PRS subframe offset		N/A	7	N/A	10	
PBCH_RA						
PBCH_RB						
PSS_RA						
SSS_RA						
PCFICH_RB						
PHICH_RA	dB	0	0	0	0	
PHICH_RB						
PDCCH_RA						
PDCCH_RB						
OCNG_RA ^{Note1}						
OCNG_RB ^{Note1}						
PRS_RA	dB	-3	0	-3	0	
$N_{oc}^{ m Note2}$	dBm/15 kHz	-98				
PRS $\hat{\mathbf{E}}_{\mathrm{s}}/N_{oc}$	dB	-6	-13	-6	-13	
PRS $\hat{E}_{s}/I_{ot}^{Note3}$	dB	-6	-13	-6	-13	
lo Note3	dBm/1.08 MHz	-79.25	-79.39	N/A	N/A	
	dBm/9 MHz	N/A	N/A	-70.04	-70.18	
PRP Note3	dBm/15kHz	-104	-111	-104	-111	
$\hat{\mathrm{E}}_{\mathrm{s}}/N_{oc}$ Note 3	dB	-3	-13	-3	-13	
RSRP Note 3	dBm/15kHz	-101	-111	-101	-111	
Propagation condition	AWGN					

- Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes).
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
- Note 3: \hat{E}_s/N_{oc} , PRS \hat{E}_s/I_{ot} , Io, RSRP and PRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io values are derived in the case that there is no PBCH, PSS or SSS in the OFDM symbols carrying PRS.

A.9.8.3.2 Test Requirements

The RSTD measurement accuracy shall fulfill the requirements in clause 9.1.10.2.

A.9.8.4 E-UTRAN TDD-TDD RSTD inter frequency case

A.9.8.4.1 Test Purpose and Environment

The purpose of this test is to verify that the RSTD inter-frequency measurement accuracy is within the specified limits in clause 9.1.10.2 in AWGN channels.

There are two synchronous cells on different carrier frequencies in the test. In all test cases, Cell 1 is the reference cell as well as the PCell and Cell 2 is the neighbour cell. The inter frequency measurements on Cell 2 are supported by a measurement gap. PCIs of the two cells are selected randomly.

The OTDOA assistance data as defined in TS 36.355, Clause 6.5.1, shall be provided to the UE before the measurement period. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of measurement period, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data. The measurement gap configuration is known and configured in the UE before the measurements start.

There is no PDSCH allocated in the subframe transmitting PRS. A time span of $T_{RSTD\ InterFreqTDD,\ E-UTRAN}$ is provided for the measurement period, and PRS are configured according to I_{PRS} in Table A.9.8.4.1-1 and Table A.9.8.4.1-2 for each of the two cells during this time.

The test parameters are given in Table A.9.8.4.1-1 and Table A.9.8.4.1-2.

Table A.9.8.4.1-1: General Test Parameters for inter frequency RSTD Tests for E-UTRAN TDD

Parameter	Unit	Value Test1 Test2		Comment				
PCFICH/PDCCH/PHICH parameters		R.8 TDD R.6 TDD		As specified in clause A.3.1.2.2				
OCNG Patterns defined in A.3.2.2		OP.4 OP.2 TDD		OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes).				
Reference cell		Cell 1	•	Cell 1 on RF channel number 1				
Neighbour cell		Cell 2		Cell 2 on RF channel number 2				
E-UTRA RF Channel Number		1,2		Two TDD carrier frequencies are used.				
Channel Bandwidth (BW _{channel})	MHz	1.4 10		•				
PRS Bandwidth	RB	6	50	PRS bandwidth is as indicated in <i>prs-Bandwidth</i> in the OTDOA assistance data defined in [24].				
Special subframe configuration		6		As specified in table 4.2-1 in TS 36.211. The same configuration in both cells.				
Uplink-downlink configuration		3	1	As specified in table 4.2-2 in TS 36.211 and table 8.1.2.5.2-2.				
Number of consecutive positioning downlink subframes N_{PRS}		6 1		As defined in TS 36.211				
prs-MutingInfo		Cell1:'11110000' Cell2:'11110000'		PRS muting is not used. See clause 6.5.1.2 in TS 36.355 for more information				
expectedRSTD μs		Cell 2: 1 Other neighbour cells: randomly between -3 and 3		The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator				
expectedRSTDUncertainty for all neighbour cells	μs	5	5	The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expected RSTD-Uncertainty index				
CP length		Normal						
		OFF						
Radio frame receive time offset between the cells at the UE antenna connector	μs	Cell 2 to Cell 1: 3	Cell 2 to Cell 1: -3	PRS are transmitted from synchronous cells				
Number of cells provided in OTDOA assistance data		16		The list includes the reference cell (received in OTDOA-ReferenceCellInfo [24]) on RF channel 1 and 15 other cells on RF channel 2, all received in OTDOA-ProvideAssistanceData [24].				
$T_{RSTD\ InterFreqTDD,\ E-UTRAN}$	ms	5120		Derived according to the RSTD measurement requirements specified in Clause 8.1.2.6.3				

Table A.9.8.4.1-2: Cell Specific Test Parameters for inter frequency RSTD Tests for E-UTRAN TDD

Parameter	l lait	Te	st1	Test2		
Parameter	Unit	Cell1	Cell2	Cell1	Cell2	
E-UTRA RF Channel Number		1	2	1	2	
Gap pattern ID		0	N/A	0	N/A	
Gapoffset		34	N/A	13	N/A	
PRS configuration Index I_{PRS}		15	35	4	14	
PRS subframe offset		N/A	20	N/A	10	
PBCH_RA						
PBCH_RB						
PSS_RA						
SSS_RA						
PCFICH_RB						
PHICH_RA	dB	0				
PHICH_RB						
PDCCH_RA						
PDCCH_RB						
OCNG_RA ^{Note1}						
OCNG_RB ^{Note1}						
PRS_RA	dB	-3	0	-3	0	
$N_{oc}^{ m Note2}$	dBm/15 kHz		-9	98		
PRS $\hat{\mathbf{E}}_{\mathrm{s}}/N_{oc}$	dB	-6	-13	-6	-13	
PRS $\hat{E}_{_{s}}/I_{_{ot}}$ Note3	dB	-6	-13	-6	-13	
lo Note3	dBm/1.08 MHz	-79.25	-79.39	N/A	N/A	
	dBm/9 MHz	N/A	N/A	-70.04	-70.18	
PRP Note3	dBm/15kHz	-104	-111	-104	-111	
$\hat{\mathrm{E}}_{\mathrm{s}}/N_{oc}^{\mathrm{Note 3}}$	dB	-3	-13	-3	-13	
RSRP Note 3	dBm/15kHz	-101	-111	-101	-111	
Propagation condition AWG					•	

- Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes).
- Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.
- Note 3: \hat{E}_s/N_{oc} , PRS \hat{E}_s/I_{ot} , Io, RSRP and PRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io values are derived in the case that there is no PBCH, PSS or SSS in the OFDM symbols carrying PRS.

A.9.8.4.2 Test Requirements

The RSTD measurement accuracy shall fulfill the requirements in clause 9.1.10.2.

A.9.8.5 E-UTRAN FDD RSTD Measurement Accuracy in Carrier Aggregation

A.9.8.5.1 Test Purpose and Environment

The purpose of these tests is to verify that the E-UTRAN FDD RSTD measurement accuracy in carrier aggregation is within the specified limits in clause 9.1.12.

There are three synchronous cells on two different carrier frequencies in the test. Cell 1 is the PCell on primary component carrier F1 (RF channel number 1), Cell 2 is the SCell and reference cell on sceondary component carrier F2 (RF channel number 2), and Cell 3 is the neighbor cell on F2.

Cell2 and Cell3 are included in the OTDOA assistance data, whilst Cell1 is not included in the OTDOA assistance data. The RSTD measurements are performed between Cell 2 and Cell 3 to verify that when both the reference cell and

neighbouring cell belong to the secondary component carrier the RSTD measurement accuracy can meet the intrafrequency RSTD accuracy requirements defined in clause 9.1.10.1.

The OTDOA assistance data as defined in TS 36.355, Clause 6.5.1.1, shall be provided to the UE before the measurement period. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of measurement period, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data. The measurement gap is not configured in the test because of UE carrier aggregation capability.

There is no PDSCH allocated in the subframe transmitting PRS. A time span of $T_{RSTD\ IntraFreqFDD,\ E-UTRAN}$ is provided for the measurement period, and PRS are configured according to I_{PRS} in Table A.9.8.5.1-1 and Table A.9.8.5.1-2 for each of the three cells during this time.

The test parameters are given in Table A.9.8.5.1-1 and Table A.9.8.5.1-2.

Table A.9.8.5.1-1: General Test Parameters for RSTD Tests for E-UTRAN FDD for Carrier Aggregation

Parameter	Unit	Value	Comment
PCFICH/PDCCH/PHICH		R.6 FDD	As specified in clause A.3.1.2.1
parameters		K.0 FDD	
OCNG Patterns defined in A.3.2.1		OP.6 FDD	OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes). There is no PDSCH allocated in the subframe transmitting PRS.
Assistance data reference cell		Cell 2	Cell 2 is the SCell on RF channel number 2
PCell		Cell 1	Cell 1 on RF channel number 1
Neighbour cell		Cell 3	Cell 3 on RF channel number 2
E-UTRA RF Channel Number		1,2	Two FDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	·
PRS Bandwidth	RB	50	PRS Bandwidth bandwidth is as indicated in <i>prs-Bandwidth</i> in the OTDOA assistance data defined in [24].
Number of consecutive positioning downlink subframes $N_{\rm PRS}$		1	As defined in TS 36.211
prs-MutingInfo		Cell1:'11110000' Cell2:'11110000' Cell3:'11110000'	See clause 6.5.1.2 in TS 36.355 for more information
Cell ID		(Cell ID of cell 2 – Cell ID of cell 3) mod 6 = 3	PCI of cell 1 is selected randomly.
expectedRSTD	μs	Cell 3:-2 Other neighbour cells: randomly between -3 and 3	The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator
expectedRSTDUncertainty for all neighbour cells	μs	5	The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD-Uncertainty index
CP length		Normal	
DRX		OFF	
Radio frame receive time offset between the cells at the UE antenna connector	μs	Cell 1 to Cell 2: -1 Cell 3 to Cell 2:1	PRS are transmitted from synchronous cells
Time alignment error between cell2 and cell1	μs	≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1.	The value of time alignment error depends upon the type of carrier aggregation.
Number of cells provided in OTDOA assistance data		16	The list includes the assistance-data- reference cell (received in OTDOA- ReferenceCellInfo [24]) and 15 other cells, all received in OTDOA- ProvideAssistanceData [24]. All cells provided in OTDOA assistance data are on RF channel 2.
$T_{ m RSTD~IntraFreqFDD,~E-UTRAN}$	ms	2560	Derived according to the RSTD measurement requirements specified in Clause 8.1.2.5.1

Table A.9.8.5.1-2: Cell Specific Test Parameters for RSTD Tests for E-UTRAN FDD for Carrier Aggregation

Parameter	Unit	Cell1	Cell2	Cell3
E-UTRA RF Channel Number		1	2	2
PRS configuration Index I _{PRS}		2	2	2
PBCH_RA				
PBCH_RB				
PSS_RA				
SSS_RA				
PCFICH_RB				
PHICH_RA	dB	0	0	0
PHICH_RB				
PDCCH_RA				
PDCCH_RB				
OCNG_RA ^{Note1}				
OCNG_RB ^{Note1}				
PRS_RA	dB	-3	0	0
$N_{oc}^{ m Note2}$	dBm/15 kHz		-98	
PRS \hat{E}_s/N_{oc}	dB	-6	-6	-13
PRS $\hat{E}_{_{s}}/I_{_{ot}}$	dB	-6	-6	-13
lo ^{Note3}	dBm/9 MHz	-70.04	-70.01	-70.01
PRP Note3	dBm/15kHz	-104	-104	-111
RSRP Note3	dBm/15kHz	-101	-104	-111
\hat{E}_s/N_{oc} Note3	dB	-3	-6	-13
Propagation condition			AWGN	•

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes).

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 3: \hat{E}_s/N_{oc} , PRS \hat{E}_s/I_{ot} , RSRP, Io and PRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io values are derived in the case that there is no PBCH, PSS or SSS in the OFDM symbols carrying PRS.

A.9.8.5.2 Test Requirements

The measurement accuracy of RSTD between Cell2 and Cell3 shall fulfill the requirements in clause 9.1.12.

A.9.8.6 E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation

A.9.8.6.1 Test Purpose and Environment

The purpose of these tests is to verify that the E-UTRAN TDD RSTD measurement accuracy in carrier aggregation is within the specified limits in clause 9.1.12.

There are three synchronous cells on two different carrier frequencies in the test. Cell 1 is the PCell on primary component carrier F1 (RF channel number 1), Cell 2 is the SCell and reference cell on sceondary component carrier F2 (RF channel number 2), and Cell 3 is the neighbor cell on F2.

Cell2 and Cell3 are included in the OTDOA assistance data, whilst Cell1 is not included in the OTDOA assistance data. The RSTD measurements are performed between Cell 2 and Cell 3 to verify that when both the reference cell and neighbouring cell belong to the secondary component carrier the RSTD measurement accuracy can meet the intrafrequency RSTD accuracy requirements defined in clause 9.1.10.1.

The OTDOA assistance data as defined in TS 36.355, Clause 6.5.1.1, shall be provided to the UE before the measurement period. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of measurement period, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data. The measurement gap is not configured in the test because of UE carrier aggregation capability.

There is no PDSCH allocated in the subframe transmitting PRS. A time span of $T_{RSTD\ IntraFreqTDD,\ E-UTRAN}$ is provided for the measurement period, and PRS are configured according to I_{PRS} in Table A.9.8.6.1-1 and Table A.9.8.6.1-2 for each of the three cells during this time.

The test parameters are given in Table A.9.8.6.1-1 and Table A.9.8.6.1-2.

Table A.9.8.6.1-1: General Test Parameters for RSTD Tests for E-UTRAN TDD for Carrier Aggregation

Parameter	Unit	Value	Comment
PCFICH/PDCCH/PHICH			As specified in clause A.3.1.2.2
parameters		R.6 TDD	·
OCNG Patterns defined in A.3.2.2		OP.2 TDD	OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes). There is no PDSCH allocated in the subframe transmitting PRS.
Assistance data reference cell		Cell 2	Cell 2 is the SCell on RF channel number 2
PCell		Cell 1	Cell 1 on RF channel number 1
Neighbour cell		Cell 3	Cell 3 on RF channel number 2
E-UTRA RF Channel Number		1,2	Two TDD carrier frequencies are used.
Channel Bandwidth (BW _{channel})	MHz	10	
PRS Bandwidth	RB	50	PRS Bandwidth bandwidth is as indicated in <i>prs-Bandwidth</i> in the OTDOA assistance data defined in [24].
Number of consecutive positioning downlink subframes N_{PRS}		1	As defined in TS 36.211
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells.
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211 and table 8.1.2.5.2-2. The same configuration in both cells.
prs-MutingInfo		Cell1:'11110000' Cell2:'11110000' Cell3:'11110000'	See clause 6.5.1.2 in TS 36.355 for more information
Cell ID		(Cell ID of cell 2 – Cell ID of cell 3) mod 6 = 3	PCI of cell 1 is selected randomly.
expectedRSTD	μs	Cell 3:-2 Other neighbour cells: randomly between -3 and 3	The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator
expectedRSTDUncertainty for all neighbour cells	μs	5	The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD-Uncertainty index
CP length DRX		Normal OFF	
Radio frame receive time offset between the cells at the UE antenna connector	μs	Cell 1 to Cell 2: -1 Cell 3 to Cell 2:1	PRS are transmitted from synchronous cells
Time alignment error between cell2 and cell1	μs	≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1.	The value of time alignment error depends upon the type of carrier aggregation.
Number of cells provided in OTDOA assistance data		16	The list includes the assistance-data- reference cell (received in OTDOA- ReferenceCellInfo [24]) and 15 other cells, all received in OTDOA- ProvideAssistanceData [24]. All cells provided in OTDOA assistance data are on RF channel 2.
T _{RSTD IntraFreqTDD} , E-UTRAN	ms	2560	Derived according to the RSTD measurement requirements specified in Clause 8.1.2.5.2

Table A.9.8.6.1-2: Cell Specific Test Parameters for RSTD Tests for E-UTRAN TDD for Carrier Aggregation

Parameter	Unit	Cell1	Cell2	Cell3
E-UTRA RF Channel Number		1	2	2
PRS configuration Index I_{PRS}		14	14	14
PBCH_RA				
PBCH_RB				
PSS_RA				
SSS_RA				
PCFICH_RB				
PHICH_RA	dB	0	0	0
PHICH_RB				
PDCCH_RA				
PDCCH_RB				
OCNG_RA ^{Note1}				
OCNG_RB ^{Note1}				
PRS_RA	dB	-3	0	0
$N_{oc}^{$	dBm/15 kHz		-98	
PRS \hat{E}_s/N_{oc}	dB	-6	-6	-13
PRS $\hat{E}_{_{s}}/I_{_{ot}}$	dB	-6	-6	-13
Io Note3	dBm/9 MHz	-70.04	-70.01	-70.01
PRP Note3	dBm/15kHz	-104	-104	-111
RSRP Note3	dBm/15kHz	-101	-104	-111
\hat{E}_s/N_{oc} Note3	dB	-3	-6	-13
Propagation condition			AWGN	•

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes).

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: \hat{E}_s/N_{oc} , PRS \hat{E}_s/I_{ot} , RSRP, lo and PRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. Io values are derived in the case that there is no PBCH, PSS or SSS in the OFDM symbols carrying PRS.

A.9.8.6.2 Test Requirements

The measurement accuracy of RSTD between Cell2 and Cell3 shall fulfill the requirements in clause 9.1.12.

A.9.8.7 E-UTRAN FDD RSTD Measurement Accuracy in Carrier Aggregation for 20MHz bandwidth

A.9.8.7.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.9.8.5.1. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.9.8.7.1-1 and A.9.8.7.1-2 will replace the values of corresponding parameters in Tables A.9.8.5.1-1 and A.9.8.5.1-2.

Table A.9.8.7.1-1: General Test Parameters for RSTD Tests for E-UTRAN FDD for Carrier Aggregation for 20MHz bandwidth

Parameter	Unit	Value	Comment
PCFICH/PDCCH/PHICH parameters		R.10 FDD	As specified in clause A.3.1.2.1
OCNG Patterns defined in A.3.2.1.14		OP.14 FDD	OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes). There is no PDSCH allocated in the subframe transmitting PRS.
Channel Bandwidth (BW _{channel})	MHz	20	
PRS Bandwidth	RB	100	PRS Bandwidth bandwidth is as indicated in <i>prs-Bandwidth</i> in the OTDOA assistance data defined in [24].
Note 1: See Table A.9.8.5.1-1 Note 2: N/A	for othe	er general test parameters.	•

Table A.9.8.7.1-2: Cell Specific Test Parameters for RSTD Tests for E-UTRAN FDD for Carrier Aggregation for 20MHz bandwidth

Parameter		Unit	Cell1	Cell2	Cell3			
lo Note1		dBm/18 MHz	-67.03	-67.00	-67.00			
Note 1: Io level has been derived from other parameters for information purposes. It is not settable parameter itself. Io values are derived in the case that there is no PBCH, PSS or SSS in the OFDM symbols carrying PRS								
Note 2:	See Table A.9.8.5.	See Table A.9.8.5.1-2 for other cell specific test parameters.						

A.9.8.7.2 Test Requirements

The test requirements defined in section A.9.8.5.2 shall apply to this test case.

A.9.8.8 E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 20MHz bandwidth

A.9.8.8.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.9.8.6.1. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.9.8.8.1-1 and A.9.8.8.1-2 will replace the values of corresponding parameters in Tables A.9.8.6.1-1 and A.9.8.6.1-2.

Table A.9.8.8.1-1: General Test Parameters for RSTD Tests for E-UTRAN TDD for Carrier Aggregation for 20MHz bandwidth

Parameter	Unit	Value	Comment
PCFICH/PDCCH/PHICH parameters		R.10 TDD	As specified in clause A.3.1.2.2
OCNG Patterns defined in A.3.2.2.8		OP.8 TDD	OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes). There is no PDSCH allocated in the subframe transmitting PRS.
Channel Bandwidth (BW _{channel})	MHz	20	
PRS Bandwidth	RB	100	PRS Bandwidth bandwidth is as indicated in <i>prs-Bandwidth</i> in the OTDOA assistance data defined in [24].
Note 1: See Table A.9.8.6.1-1 Note 2: N/A	for othe	er general test parameters.	

Table A.9.8.8.1-2: Cell Specific Test Parameters for RSTD Tests for E-UTRAN TDD for Carrier Aggregation for 20MHz bandwidth

ı	Parameter Unit		Cell1	Cell2	Cell3		
lo Note1		dBm/18 MHz	-67.03	-67.00	-67.00		
Note 1: Note 2:	values are derived	I has been derived from other parameters for information purposes. It is not settable parameter itself. Io are derived in the case that there is no PBCH, PSS or SSS in the OFDM symbols carrying PRS able A.9.8.6.1-2 for other cell specific test parameters.					

A.9.8.8.2 Test Requirements

The test requirements defined in section A.9.8.6.2 shall apply to this test case.

A.9.8.9 E-UTRAN FDD RSTD Measurement Accuracy in Carrier Aggregation for 10MHz+5MHz

A.9.8.9.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.9.8.5.1. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.9.8.9.1-1 and A.9.8.9.1-2 will replace the values of corresponding parameters in Tables A.9.8.5.1-1 and A.9.8.5.1-2.

Table A.9.8.9.1-1: General Test Parameters for RSTD Tests for E-UTRAN FDD for Carrier Aggregation for 10MHz+5MHz

Parameter	Unit	Value	Comment			
PCFICH/PDCCH/PHICH parameters		Cell1: R.6 FDD Cell2: R.11 FDD Cell3: R.11 FDD	As specified in clause A.3.1.2.1			
OCNG Patterns defined in A.3.2.1		Cell1: OP.6 FDD Cell2: OP.19 FDD Cell3: OP.19 FDD	OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes). There is no PDSCH allocated in the subframe transmitting PRS.			
Channel Bandwidth (BW _{channel})	MHz	Cell1: 10 Cell2: 5 Cell3: 5				
PRS Bandwidth	RB	Cell1: 50 Cell2: 25 Cell3: 25	PRS Bandwidth bandwidth is as indicated in <i>prs-Bandwidth</i> in the OTDOA assistance data defined in [24].			
Number of consecutive positioning downlink subframes N_{PRS}		2	As defined in TS 36.211			
Note 1: See Table A.9.8.5	Note 1: See Table A.9.8.5.1-1 for other general test parameters.					

Note 2: N/A

Table A.9.8.9.1-2: Cell Specific Test Parameters for RSTD Tests for E-UTRAN FDD for Carrier Aggregation for 10MHz+5MHz

Parameter	Unit	Cell1	Cell2	Cell3			
Note1	Io Note1 dBm/9 MHz		N/A	N/A			
10	dBm/4.5 MHz		-73.02	-73.02			
Note 1: lo level has been derived from other parameters for information purposes. It							
is not settable parameter itself. Io values are derived in the case that there is							
no PBCH, PSS or SSS in the OFDM symbols carrying PRS							
Note 2:	See Table A.9.8.5.1-2 for other	er cell specific te	st parameters.				

A.9.8.9.2 **Test Requirements**

The test requirements defined in section A.9.8.5.2 shall apply to this test case.

A.9.8.10 E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 10MHz+5MHz

A.9.8.10.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.9.8.6.1. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.9.8.10.1-1 and A.9.8.10.1-2 will replace the values of corresponding parameters in Tables A.9.8.6.1-1 and A.9.8.6.1-2.

Table A.9.8.10.1-1: General Test Parameters for RSTD Tests for E-UTRAN TDD for Carrier Aggregation for 10MHz+5MHz

Parameter	Unit	Value	Comment		
PCFICH/PDCCH/PHICH		Cell1: R.6 TDD	As specified in clause A.3.1.2.2		
parameters		Cell2: R.11 TDD Cell3: R.11 TDD			
OCNG Patterns defined in A.3.2.2		Cell1: OP.2 TDD Cell2: OP.10 TDD Cell3: OP.10 TDD	OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes). There is no PDSCH allocated in the subframe transmitting PRS.		
Channel Bandwidth (BW _{channel})	MHz	Cell1: 10 Cell2: 5 Cell3: 5			
PRS Bandwidth	RB	Cell1: 50 Cell2: 25 Cell3: 25	PRS Bandwidth bandwidth is as indicated in <i>prs-Bandwidth</i> in the OTDOA assistance data defined in [24].		
Number of consecutive positioning downlink subframes N_{PRS}		2	As defined in TS 36.211		
Note 1: See Table A.9.8.6	Note 1: See Table A.9.8.6.1-1 for other general test parameters.				

Note 2: N/A

Table A.9.8.10.1-2: Cell Specific Test Parameters for RSTD Tests for E-UTRAN TDD for Carrier Aggregation for 10MHz+5MHz

Parameter	Unit	Cell1	Cell2	Cell3			
lo Note1	dBm/9 MHz	-70.04	N/A	N/A			
10	dBm/4.5 MHz	N/A	-73.02	-73.02			
Note 1: lo level has been derived from other parameters for information purposes. It is not settable parameter itself. lo values are derived in the case that there is no PBCH, PSS or SSS in the OFDM symbols carrying PRS							
Note 2: Se	e Table A.9.8.6.1-2 for oth	· · · · · ·					

A.9.8.10.2 **Test Requirements**

The test requirements defined in section A.9.8.6.2 shall apply to this test case.

A.9.8.11 E-UTRAN FDD RSTD Measurement Accuracy in Carrier Aggregation for 5 + 5MHz bandwidth

A.9.8.11.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.9.8.5.1. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.9.8.11.1-1 and A.9.8.11.1-2 will replace the values of corresponding parameters in Tables A.9.8.5.1-1 and A.9.8.5.1-2.

Table A.9.8.11.1-1: General Test Parameters for RSTD Tests for E-UTRAN FDD for Carrier Aggregation for 5+5MHz bandwidth

Parameter	Unit	Value	Comment
PCFICH/PDCCH/PHICH parameters		R.11 FDD	As specified in clause A.3.1.2.1
OCNG Patterns defined in A.3.2.1.19		OP.19 FDD	OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes). There is no PDSCH allocated in the subframe transmitting PRS.
Channel Bandwidth (BW _{channel})	MHz	5	
PRS Bandwidth	RB	25	PRS Bandwidth bandwidth is as indicated in <i>prs-Bandwidth</i> in the OTDOA assistance data defined in [24].
Number of consecutive positioning downlink subframes N_{PRS}		2	As defined in TS 36.211
Note 1: See Table A.9.8.5.1-1 for other g Note 2: N/A	eneral t	est parameters.	

Table A.9.8.11.1-2: Cell Specific Test Parameters for RSTD Tests for E-UTRAN FDD for Carrier Aggregation for 5+5MHz bandwidth

Parameter		Unit	Cell1	Cell2	Cell3
lo Note1	Io Note1 dBm/4.5 MHz		-73.05	-73.02	-73.02
Note 1: lo level has been derived from other parameters for information purposes. It is not settable				not settable	
parameter itself. Io values are derived in the case that there is no PBCH, PSS or SSS in the					or SSS in the
OFDM symbols carrying PRS					
Note 2:	See Table A.9	.8.5.1-2 for other cell specific	test parameters.		

A.9.8.11.2 Test Requirements

The test requirements defined in section A.9.8.5.2 shall apply to this test case.

A.9.8.12 E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 5+5MHz bandwidth

A.9.8.12.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.9.8.6.1. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.9.8.12.1-1 and A.9.8.12.1-2 will replace the values of corresponding parameters in Tables A.9.8.6.1-1 and A.9.8.6.1-2.

Table A.9.8.12.1-1: General Test Parameters for RSTD Tests for E-UTRAN TDD for Carrier Aggregation for 5+5MHz bandwidth

Parameter	Unit	Value	Comment
PCFICH/PDCCH/PHICH parameters		R.11 TDD	As specified in clause A.3.1.2.2
OCNG Patterns defined in A.3.2.2.10		OP.10 TDD	OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes). There is no PDSCH allocated in the subframe transmitting PRS.
Channel Bandwidth (BW _{channel})	MHz	5	
PRS Bandwidth	RB	25	PRS Bandwidth bandwidth is as indicated in <i>prs-Bandwidth</i> in the OTDOA assistance data defined in [24].
Number of consecutive positioning downlink subframes N_{PRS}		2	As defined in TS 36.211
Note 1: See Table A.9.8.6.1-1 for other gen	eral test	parameters.	

Table A.9.8.12.1-2: Cell Specific Test Parameters for RSTD Tests for E-UTRAN TDD for Carrier Aggregation for 5+5MHz bandwidth

Parameter Unit		Cell1	Cell2	Cell3
Io ^{Note1} dBm/4.5 MHz		-73.05	-73.02	-73.02
			1. 1	

Io level has been derived from other parameters for information purposes. It is not settable parameter itself. Io values are derived in the case that there is no PBCH, PSS or SSS in the OFDM symbols carrying PRS See Table A.9.8.6.1-2 for other cell specific test parameters. Note 2:

A.9.8.12.2 **Test Requirements**

The test requirements defined in section A.9.8.6.2 shall apply to this test case.

A.9.8.13 E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 20MHz+10MHz

A.9.8.13.1 Test Purpose and Environment

The purpose of this test case is the same as for the test defined in subclause A.9.8.6.1. The test parameters are the same except those described in the following section. The listed parameter values in Tables A.9.8.13.1-1 and A.9.8.13.1-2 will replace the values of corresponding parameters in Tables A.9.8.6.1-1 and A.9.8.6.1-2.

Table A.9.8.13.1-1: General Test Parameters for RSTD Tests for E-UTRAN TDD for Carrier Aggregation for 20MHz+10MHz

Parameter	Unit	Value	Comment
PCFICH/PDCCH/PHICH		Cell1: R.10 TDD	As specified in clause A.3.1.2.2
parameters		Cell2: R.6 TDD	
		Cell3: R.6 TDD	
OCNG Patterns defined in A.3.2.2		Cell1: OP.8 TDD Cell2: OP.2 TDD Cell3: OP.2 TDD	OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes). There is no PDSCH allocated in the subframe transmitting PRS.
Channel Bandwidth		Cell1: 20	
(BW _{channel})	MHz	Cell2: 10	
		Cell3: 10	
PRS Bandwidth		Cell1: 100	PRS Bandwidth bandwidth is as
	RB	Cell2: 50	indicated in <i>prs-Bandwidth</i> in the OTDOA
		Cell3: 50	assistance data defined in [24].
Note 1: See Table A.9.8.6 Note 2: N/A	6.1-1 for	other general test para	ameters.

Table A.9.8.13.1-2: Cell Specific Test Parameters for RSTD Tests for E-UTRAN TDD for Carrier Aggregation for 20MHz+10MHz

Paramet	Parameter Unit C		Cell1	Cell2	Cell3
lo Note1		dBm/ 18MHz	-67.03	N/A	N/A
10		dBm/ 9MHz	N/A	-70.01	-70.01
Note 1: Io level has been derived from other parameters for information purposes. It is not settable parameter itself. Io values are derived in the case that there is no PBCH, PSS or SSS in the OFDM symbols carrying PRS					
Note 2:	See	Table A.9.8.6.1-2 for oth	er cell specific test	parameters.	

A.9.8.13.2 Test Requirements

The test requirements defined in section A.9.8.6.2 shall apply to this test case.

A.9.8.14 E-UTRAN FDD RSTD Measurement Accuracy in 3DL Carrier Aggregation

A.9.8.14.1 Test Purpose and Environment

The purpose of these tests is to verify that the E-UTRAN FDD RSTD measurement accuracy in carrier aggregation is within the specified limits in clause 9.1.12.

There are four synchronous cells on three different carrier frequencies in the test. Cell 1 is the PCell on primary component carrier F1 (RF channel number 1), Cell 2 is an SCell on secondary component carrier F2 (RF channel number 2), Cell 3 is an SCell and reference cell on secondary component carrier F3 (RF channel number 3), and Cell 4 is the neighbor cell on F3.

Cell 1, Cell2, Cell3, and Cell 4 are included in the OTDOA assistance data. The RSTD measurements are performed

- between Cell 4 and Cell 3 to verify the accuracy of RSTD measurement when the reference cell and neighbouring cell belong to the same secondary component carrier can meet the intra-frequency RSTD accuracy requirements defined in clause 9.1.10.1.
- between Cell 1 and Cell 3 to verify the accuracy of RSTD measurement between the PCell and an SCell can meet the inter-frequency RSTD accuracy requirements defined in clause 9.1.10.2.

- between Cell 2 and Cell 3 to verify the accuracy of RSTD measurement between two SCells can meet the interfrequency RSTD accuracy requirements defined in clause 9.1.10.2.

The OTDOA assistance data as defined in TS 36.355, Clause 6.5.1.1, shall be provided to the UE before the measurement period. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of measurement period, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data. The measurement gap is not configured in the test because of UE carrier aggregation capability.

There is no PDSCH allocated in the subframe transmitting PRS. A time span of $T_{RSTD\ InterFreqFDD,E-UTRAN}$ is provided for the measurement period, and PRS are configured according to I_{PRS} in Table A.9.8.14.1-1 and Table A.9.8.14.1-2 for each of the three cells during this time.

The test parameters are given in Table A.9.8.14.1-1 and Table A.9.8.14.1-2.

Table A.9.8.14.1-1: General Test Parameters for RSTD Tests for E-UTRAN FDD for 3DL Carrier Aggregation

Parameter	Unit	Value	Comment
PCell		Cell 1	Cell 1 on RF channel number 1
SCell 1		Cell 2	Cell 2 is an SCell on RF channel number 2
SCell 2 (Assistance data reference cell)		Cell 3	Cell 3 is an SCell on RF channel number 3
Neighbour cell		Cell 4	Cell 4 on RF channel number 3
PRS configuration index I_{PRS}		171 for all cells on PCC 181 for all cells on SCC1 191 for all cells on SCC2	This corresponds to periodicity of 320 ms and PRS subframe offset of $I_{\rm PRS}-160$ DL subframes, as defined in TS 36.211 [16], Table 6.10.4.3-1
prs-MutingInfo		Cell1:'11110000' Cell2:'11110000' Cell3:'11110000' Cell4:'11110000'	See clause 6.5.1.2 in TS 36.355 for more information
prs-SubframeOffset		Cells on PCC: 300 Cells on SCC1: 310 Cells on SCC2, except reference cell:	Subframe offset, counted in full subframes. The corresponding parameter in the OTDOA assistance data is prs-SubframeOffset specified in TS 36.355 [24]
slotNumberOffset		Cells on PCC: 0 Cells on SCC1: 0 Cells on SCC2, except reference cell:	The slot number offset at the transmitter between a neighbour cell and the assistance data reference cell. The corresponding parameter in the OTDOA assistance data is slotNumberOffset specified in TS 36.355 [24].
Cell ID		(Cell ID of cell 4 – Cell ID of cell 3) mod 6 = 3	PCIs of cell 1 and cell 2 are selected randomly.
expectedRSTD	μs	Cell 1: -2 Cell 2: 0 Cell 4: 2 Other neighbour cells: randomly between -3 and 3	The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator
expectedRSTDUncertainty for all neighbour cells	μs	5	The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD-Uncertainty index
CP length	ļ	Normal	
Radio frame receive time offset between the cells at the UE antenna connector	μs	OFF Cell 1 to Cell 2: 1 Cell 3 to Cell 2: -1 Cell 4 to Cell 2: 3	PRS are transmitted from synchronous cells
Time alignment errors between Cell 1, Cell 2, and Cell 3	μs	≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1.	The value of time alignment error depends upon the type of carrier aggregation.

Number of cells provided in OTDOA assistance data		16	The list includes the assistance-data-reference cell (received in OTDOA-ReferenceCellInfo [24]) and 15 other cells, all received in OTDOA-ProvideAssistanceData [24]. Cell 1 and Cell 2 appears at random places in the first half of the neighbour cell list in the OTDOA assistance data. Cell 4 always appears at random places in the second half of the list.
T _{RSTD InterFreqFDD, E-UTRAN}	ms	4960	Derived according to the RSTD measurement requirements specified in Clause 8.1.2.6.1

Table A.9.8.14.1-2: Cell Specific Test Parameters for RSTD Tests for E-UTRAN FDD for Carrier Aggregation

Parameter	Unit	Cell1	Cell2	Cell3	Cell 4
E-UTRA RF Channel Number		1	2	3	3
Channel Bandwidth (BW _{channel})	MHz	5,10,20	5,10,20	5,10,20	5,10,20
PCFICH/PDCCH/PHICH parameters as		5MHz:	5MHz: R.11	5MHz: R.11	5MHz: R.11
specified in clause A.3.1.2.1		R.11 FDD	FDD	FDD	FDD
		10MHz:	10MHz: R.6	10MHz: R.6	10MHz: R.6
		R.6 FDD	FDD	FDD	FDD
		20MHz:	20MHz:	20MHz:	20MHz:
		R.10 FDD	R.10 FDD	R.10 FDD 5MHz:	R.10 FDD 5MHz:
		5MHz: OP.18 FDD	5MHz: OP.18 FDD	OP.18 FDD	OP.18 FDD
		10MHz:	10MHz:	10MHz:	10MHz:
OCNG Patterns defined in A.3.2.1		OP.5 FDD	OP.5 FDD	OP.5 FDD	OP.5 FDD
		20MHz:	20MHz:	20MHz:	20MHz:
		OP.13 FDD	OP.13 FDD	OP.13 FDD	OP.13 FDD
PRS Transmission Bandwidth (PRS					
transmission bandwidth depends on selected	RB	5MHz: 25	5MHz: 25	5MHz: 25	5MHz: 25
channel bandwidth. PRS are transmitted over	KD	10MHz: 50 20MHz:100	10MHz: 50 20MHz:100	10MHz: 50 20MHz:100	10MHz: 50 20MHz:100
the system bandwidth)		201VII 12. 100	201011 12. 100	201011 12. 100	201011 12. 100
Number of consecutive downlink positioning					
subframes $N_{ m PRS}$. $N_{ m PRS}$ also depends on		5MHz: 2	5MHz: 2	5MHz: 2	5MHz: 2
selected channel bandwidth. As defined in TS		10MHz: 1	10MHz: 1	10MHz: 1	10MHz: 1
36.211 [16]. The number of subframes in a		20MHz:1	20MHz:1	20MHz:1	20MHz:1
positioning occasion					
PBCH_RA					
PBCH_RB					
PSS_RA					
SSS_RA					
PCFICH_RB					
PHICH_RA	dB	0	0	0	0
PHICH_RB					
PDCCH_RA PDCCH_RB					
OCNG_RA ^{Note1}					
OCNG_RB ^{Note1}					
PRS_RA	dB	-3	0	0	0
	dBm/15	-3	_		U
$N_{oc}^{ m Note2}$	kHz		-(98	
PRS \hat{E}_s/N_{oc}	dB	-6	-6	-6	-13
PRS \hat{E}_{s}/I_{ot}	dB	-6	-6	-6	-13
	4D: /0	-70.04	-70.01	-70.01	-70.01
lo Note3	dBm/9	+10log	+10log	+10log	+10log
	MHz	$(N_{RB,c}/50)$	(N _{RB,c} /50)	$(N_{RB,c}/50)$	(N _{RB,c} /50)
PRP Note3	dBm/15kHz	-104	-104	-104	-111
RSRP Note3	dBm/15kHz	-101	-104	-104	-111
\hat{E}_s/N_{oc} Note3	dB	-3	-6	-6	-13
Propagation condition			AW	/GN	

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes).

Note 3: \hat{E}_s/N_{oc} , PRS \hat{E}_s/I_{ot} , RSRP, lo and PRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. lo values are derived in the case that there is no PBCH, PSS or SSS in the OFDM symbols carrying PRS.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

A.9.8.14.2 Test Requirements

The measurement accuracy of RSTD between Cell1 and Cell3 shall fulfill the requirements in clause 9.1.12.2

The measurement accuracy of RSTD between Cell2 and Cell3 shall fulfill the requirements in clause 9.1.12.2

The measurement accuracy of RSTD between Cell4 and Cell3 shall fulfill the requirements in clause 9.1.12.1.

A.9.8.15 E-UTRAN TDD RSTD Measurement Accuracy in 3DL Carrier Aggregation

A.9.8.15.1 Test Purpose and Environment

The purpose of these tests is to verify that the E-UTRAN TDD RSTD measurement accuracy in carrier aggregation is within the specified limits in clause 9.1.12.

There are four synchronous cells on three different carrier frequencies in the test. Cell 1 is the PCell on primary component carrier F1 (RF channel number 1), Cell 2 is an SCell on secondary component carrier F2 (RF channel number 2), Cell 3 is an SCell and reference cell on secondary component carrier F3 (RF channel number 3), and Cell 4 is the neighbor cell on F3.

Cell 1, Cell2, Cell3, and Cell 4 are included in the OTDOA assistance data. The RSTD measurements are performed

- between Cell 4 and Cell 3 to verify the accuracy of RSTD measurement when the reference cell and neighbouring cell belong to the same secondary component carrier can meet the intra-frequency RSTD accuracy requirements defined in clause 9.1.10.1.
- between Cell 1 and Cell 3 to verify the accuracy of RSTD measurement between the PCell and an SCell can meet the inter-frequency RSTD accuracy requirements defined in clause 9.1.10.2.
- between Cell 2 and Cell 3 to verify the accuracy of RSTD measurement between two SCells can meet the interfrequency RSTD accuracy requirements defined in clause 9.1.10.2.

The OTDOA assistance data as defined in TS 36.355, Clause 6.5.1.1, shall be provided to the UE before the measurement period. The last TTI containing the OTDOA assistance data shall be provided to the UE ΔT ms before the start of measurement period, where $\Delta T = 150$ ms is the maximum processing time of the OTDOA assistance data. The measurement gap is not configured in the test because of UE carrier aggregation capability.

There is no PDSCH allocated in the subframe transmitting PRS. A time span of $T_{RSTD\ InterFreqTDD,\ E-UTRAN}$ is provided for the measurement period, and PRS are configured according to I_{PRS} in Table A.9.8.15.1-1 and Table A.9.8.15.1-2 for each of the three cells during this time.

The test parameters are given in Table A.9.8.15.1-1 and Table A.9.8.15.1-2.

Table A.9.8.15.1-1: General Test Parameters for RSTD Tests for E-UTRAN TDD for 3DL Carrier Aggregation

Parameter	Unit	Value	Comment
PCell		Cell 1	Cell 1 on RF channel number 1
SCell 1		Cell 2	Cell 2 is an SCell on RF channel number 2
SCell 2 (Assistance data reference cell)		Cell 3	Cell 3 is an SCell on RF channel number 3
Neighbour cell		Cell 4	Cell 4 on RF channel number 3
E-UTRA RF Channel Number		1,2,3	Three TDD carrier frequencies are used.
PRS configuration index I_{PRS}		171 for all cells on PCC 181 for all cells on SCC1 191 for all cells on SCC2	This corresponds to periodicity of 320 ms and PRS subframe offset of $I_{\rm PRS}-160$ DL subframes, as defined in TS 36.211 [16], Table 6.10.4.3-1
prs-MutingInfo		Cell1:'11110000' Cell2:'11110000' Cell3:'11110000' Cell4:'11110000'	See clause 6.5.1.2 in TS 36.355 for more information
prs-SubframeOffset		Cells on PCC: 300 Cells on SCC1: 310 Cells on SCC2, except reference cell: 0	Subframe offset, counted in full subframes. The corresponding parameter in the OTDOA assistance data is prs-SubframeOffset specified in TS 36.355 [24]
slotNumberOffset		Cells on PCC: 0 Cells on SCC1: 0 Cells on SCC2, except reference cell: 0	The slot number offset at the transmitter between a neighbour cell and the assistance data reference cell. The corresponding parameter in the OTDOA assistance data is slotNumberOffset specified in TS 36.355 [24].
Special subframe configuration		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells.
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211 and table 8.1.2.5.2-2. The same configuration in both cells.
Cell ID		(Cell ID of cell 4 – Cell ID of cell 3) mod 6 = 3	PCIs of cell 1 and cell 2 are selected randomly.
expectedRSTD	μs	Cell 1: -2 Cell 2: 0 Cell 4: 2 Other neighbour cells: randomly between -3 and 3	The expected RSTD is what is expected at the receiver. The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD indicator
expectedRSTDUncertainty for all neighbour cells	μs	5	The corresponding parameter in the OTDOA assistance data specified in TS 36.355 [24] is the expectedRSTD-Uncertainty index
CP length		Normal	
Radio frame receive time offset between the cells at the UE antenna connector	μs	OFF Cell 1 to Cell 2: 1 Cell 3 to Cell 2: -1 Cell 4 to Cell 2: 3	PRS are transmitted from synchronous cells
Time alignment errors between Cell 1, Cell 2, and Cell 3	μs	≤ Time alignment error as specified in 3GPP TS 36.104 [30] clause 6.5.3.1.	The value of time alignment error depends upon the type of carrier aggregation.

Number of cells provided in OTDOA assistance data		16	The list includes the assistance-data-reference cell (received in OTDOA-ReferenceCellInfo [24]) and 15 other cells, all received in OTDOA-ProvideAssistanceData [24]. Cell 1 and Cell 2 appears at random places in the first half of the neighbour cell list in the OTDOA assistance data. Cell 4 always appears at random places in the second half of the list.
$T_{ m RSTD~InterFreqTDD,E-UTRAN}$	ms	4960	Derived according to the RSTD measurement requirements specified in Clause 8.1.2.6.3

Table A.9.8.15.1-2: Cell Specific Test Parameters for RSTD Tests for E-UTRAN TDD for Carrier Aggregation

Parameter	Unit	Cell1	Cell2	Cell3	Cell 4
E-UTRA RF Channel Number		1	2	3	3
Channel Bandwidth (BW _{channel})	MHz	5,10,20	5,10,20	5,10,20	5,10,20
PCFICH/PDCCH/PHICH parameters as		5MHz: R11	5MHz: R11	5MHz: R11	5MHz: R11
specified in clause A.3.1.2.2		TDD	TDD	TDD	TDD
		10MHz: R6	10MHz: R6	10MHz: R6	10MHz: R6
		TDD	TDD	TDD	TDD
		20MHz:	20MHz:	20MHz:	20MHz:
		R10 TDD	R10 TDD	R10 TDD	R10 TDD
		5MHz:	5MHz:	5MHz:	5MHz:
OCNG Patterns defined in A.3.2.2 (OP.10 TDD	OP.10 TDD	OP.10 TDD	OP.10 TDD
There is no PDSCH allocated in the subframe		10MHz:	10MHz:	10MHz:	10MHz:
transmitting PRS)		OP.2 TDD	OP.2 TDD	OP.2 TDD	OP.2 TDD
,		20MHz: OP.8 TDD	20MHz:	20MHz: OP.8 TDD	20MHz: OP.8 TDD
PRS Transmission Bandwidth (PRS		UP.6 100	OP.8 TDD	UP.6 100	UP.6 1DD
transmission bandwidth depends on selected		5MHz: 25	5MHz: 25	5MHz: 25	5MHz: 25
channel bandwidth. PRS are transmitted over	RB	10MHz: 50	10MHz: 50	10MHz: 50	10MHz: 50
the system bandwidth)		20MHz:100	20MHz:100	20MHz:100	20MHz:100
Number of consecutive downlink positioning					
subframes $N_{ m PRS}$. $N_{ m PRS}$ also depends on		5MHz: 2	5MHz: 2	5MHz: 2	5MHz: 2
selected channel bandwidth. As defined in TS		10MHz: 1	10MHz: 1	10MHz: 1	10MHz: 1
36.211 [16]. The number of subframes in a		20MHz:1	20MHz:1	20MHz:1	20MHz:1
positioning occasion					
PBCH_RA					
PBCH_RB	†				
PSS_RA	1				
SSS_RA	1				
PCFICH_RB	1				
PHICH_RA	dB	0	0	0	0
PHICH_RB	1 "2	Ü		· ·	
PDCCH_RA	1				
PDCCH_RB	7				
OCNG_RA ^{Note1}	7				
OCNG RB ^{Note1}					
PRS_RA	dB	-3	0	0	0
	dBm/15		_	_	-
$N_{oc}^{ m Note2}$	kHz		-9	98	.
PRS \hat{E}_s/N_{oc}	dB	-6	-6	-6	-13
PRS $\hat{E}_{\scriptscriptstyle \mathrm{s}}/\mathrm{I}_{\scriptscriptstyle \mathrm{ot}}$	dB	-6	-6	-6	-13
	dD/0	-70.04	-70.01	-70.01	-70.01
lo Note3	dBm/9	+10log	+10log	+10log	+10log
	MHz	$(N_{RB,c}/50)$	(N _{RB,c} /50)	(N _{RB,c} /50)	(N _{RB,c} /50)
PRP Note3	dBm/15kHz	-104	-104	-104	-111
RSRP Note3	dBm/15kHz	-101	-104	-104	-111
\hat{E}_s/N_{oc} Note3	dB	-3	-6	-6	-13
Propagation condition	1		AW	'GN	1
Note 1: OCNG shall be used such that both s	alla ana fullu all				

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols (other than those in the PRS subframes).

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: \hat{E}_s/N_{oc} , PRS \hat{E}_s/I_{ot} , RSRP, lo and PRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves. lo values are derived in the case that there is no PBCH, PSS or SSS in the OFDM symbols carrying PRS.

A.9.8.15.2 Test Requirements

The measurement accuracy of RSTD between Cell1 and Cell3 shall fulfill the requirements in clause 9.1.12.2

The measurement accuracy of RSTD between Cell2 and Cell3 shall fulfill the requirements in clause 9.1.12.2

The measurement accuracy of RSTD between Cell4 and Cell3 shall fulfill the requirements in clause 9.1.12.1.

A.9.9 RSRP and RSRQ on the serving cell

A.9.9.1 FDD Intra frequency serving cell case

A.9.9.1.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP/RSRQ absolute measurement accuracy is within the specified limits. This test will verify the requirements in Clause 9.1.2.1 and 9.1.5.1 for FDD intra frequency measurements.

A.9.9.1.2 Test parameters

In this set of test case there is only the serving cell. Absolute accuracy of RSRP/RSRQ intra frequency measurements for the serving cell is tested by using the parameters in Table A.9.9.1.2-1. In the test case, Cell 1 is the serving cell.

Table A.9.9.1.2-1: RSRP FDD Intra frequency test parameters

T T T T T T T T T T T T T T T T T T T					
Pa	rameter	Unit	Test Cell 1		
E-UTRA RF Ch	annel Number		1		
BW _{channel}		MHz	10		
Measurement b	andwidth	$n_{\scriptscriptstyle PRB}$	22—27		
	PDSCH Reference measurement channel defined in A.3.1.1.1		R.0 FDD		
PDSCH allocati		n_{PRB}	13—36		
	H/PHICH Reference	PRB	10 00		
A.3.1.2.1	channel defined in		R.6 FDD		
OCNG Patterns (OP.1 FDD)	defined in A.3.2.1.1		OP.1 FDD		
PBCH_RA					
PBCH_RB					
PSS_RA					
SSS_RA					
PCFICH_RB PHICH_RA					
PHICH_RB		dB	0		
PDCCH_RA			-		
PDCCH_RB					
PDSCH_RA					
PDSCH_RB OCNG_RA ^{Note1}					
OCNG_RA OCNG RB ^{Note1}					
OCNG_KB	Bands FDD_A		-122		
	Bands FDD_B		-121.5		
	Bands FDD_C		-121		
$N_{oc}^{ m Note2}$	Bands FDD_D	dBm/15 kHz	-120.5		
	Bands FDD_E, FDD_F Note 5	dbill/15 ki iz	-120		
	Bands FDD_G Note 7		-119		
	Bands FDD_H		-118.5		
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$		dB	-4		
s / ot	Bands FDD A		-126		
	Bands FDD_B		-125.5		
	Bands FDD_C		-125		
	Bands FDD_D		-124.5		
RSRP ^{Note3}	Bands EDD E	dBm/15 kHz	-124		
KOKF	FDD_F Note 5	UDIII/13 KI12	-124		
	Bands FDD_G Note 7		-123		
	Bands FDD_H		-122.5		
	Bands FDD_A				
	Bands FDD_B				
	Bands FDD_C				
RSRQ ^{Note3}	Bands FDD_D	dB	-16.25		
NONQ	Bands FDD_E, FDD_F Note 5	uБ	-10.23		
	Bands FDD_G Note 7				
	Bands FDD_H				
	Bands FDD_A		-92.76		
	Bands FDD_B		-92.26		
Io ^{Note3}	Bands FDD_C	dBm/9 MHz	-91.76		
	Bands FDD_D		-91.26		
	Bands FDD_E, FDD_F Note 5		-90.76		
	1 ·	1			

	Bands FDD_G Note 7		-89.76
Bands FDD_H			-89.26
\hat{E}_s/N_{oc}		dB	-4
Propagat	ion condition	-	AWGN
Note 1: Note 2:	OCNG shall be used such that and a constant total transmachieved for all OFDM symulterference from other cellithe test is assumed to be countried and shall be modelled as All	itted power spect bols. s and noise soul onstant over sub	ctral density is rces not specified in ocarriers and time
	N_{oc} to be fulfilled.		
Note 3:	RSRP, RSRQ and lo levels parameters for information parameters themselves.		
Note 4:	RSRP minimum requirement independent interference as port.	•	•
Note 5:	For Band 26, the tests shall frequency of the assigned E 865-894 MHz.	•	
Note 6: Note 7:	E-UTRA operating band gro Except Band 29 and Band 3	•	ned in Section 3.5.

A.9.9.1.3 Test Requirements

The absolute RSRP and RSRQ measurement accuracy shall fulfil the requirements in clause 9.1.2.1 and 9.1.5.1 respectively.

A.9.9.2 TDD Intra frequency serving cell case

A.9.9.2.1 Test Purpose and Environment

The purpose of this test is to verify that the RSRP/RSRQ absolute measurement accuracy is within the specified limits. This test will verify the requirements in Section 9.1.2.1 and 9.1.5.1 for TDD intra frequency measurements.

A.9.9.2.2 Test parameters

In this set of test case there is only the serving cell. Absolute accuracy of RSRP/RSRQ intra frequency measurements for the serving cell is tested by using the parameters in Table A.9.9.2.2-1. In the test case, Cell 1 is the serving cell.

Table A.9.9.2.2-1: RSRP TDD Intra frequency test parameters

Р	arameter	Unit	Test Cell 1	
E LITDA DE C	hannel Number		1	
BW _{channel}	Harmer Number	MHz	10	
Special subfra	me configuration Note1	IVII IZ	6	
Uplink/downlin	nk configuration Note1		1	
Measurement		n_{PRB}	22—27	
PDSCH Refer	ence measurement	T KD	R.0 TDD	
PDSCH alloca		n_{PRB}	13—36	
PDCCH/PCFI	CH/PHICH Reference	FKB		
	channel defined in		R.6 TDD	
OCNG Patterr (OP.1 TDD)	ns defined in A.3.2.2.1		OP.1 TDD	
PBCH_RA PBCH_RB PSS_RA SSS_RA PCFICH_RB PHICH_RA PHICH_RB PDCCH_RA PDCCH_RB PDSCH_RA PDSCH_RA PDSCH_RB OCNG_RA OCNG_RB Note Noce	Bands TDD_A Bands TDD_C	dB dB	-122 -121	
^ /-	Bands TDD_E		-120	
${ m \hat{E}}_{_{ m s}}/{ m I}_{_{ m ot}}$		dB	-4	
	Bands TDD_A		-126	
RSRP ^{Note4}	Bands TDD_C	dBm/15 kHz	-125	
	Bands TDD_E		-124	
	Bands TDD_A			
RSRQ ^{Note4}	Bands TDD C	dB	-16.25	
	Bands TDD_E			
	Bands TDD_A		-92.76	
Io ^{Note4} Bands TDD_C		dBm/9 MHz	-91.76	
	Bands TDD_E	†	-90.76	
\hat{E}_s/N_{oc}	. =	dB	-4	
Propagation condition - AWGN				
Note 1: For	special subframe and			
	oles 4.2-1 and 4.2-2 in 1			
Note 2: OCNG shall be used such that both cells are fully allocated				

Note 2: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 3: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 4: RSRP, RSRQ and lo levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 5: RSRP minimum requirements are specified assuming independent interference and noise at each receiver antenna

Note 6: E-UTRA operating band groups are as defined in Section 3.5.

A.9.9.2.3 Test Requirements

The absolute RSRP and RSRQ measurement accuracy shall fulfil the requirements in section 9.1.2.1 and 9.1.5.1 respectively.

A.10 Proximity-based Services in Any Cell Selection State

A.10.1 E-UTRAN FDD – UE ProSe Direct Communication Transmission Timing Accuracy Test

A.10.1.1 Test Purpose and Environment

The purpose of this test is to verify the timing requirements for ProSe Direct Communication transmissions in Any Cell Selection state defined in clause 11.2.

For this test, the UE is triggered by the test loop function or the upper layers to transmit for ProSe Direct Communication.

The test parameters are given in Table A.10.1.1-1 below. There is no serving cell and one active SyncRef UE in this test. The test system shall emulate the SyncRef UE to transmit SLSS and MIB-SL every synchronization period.

The test system will configure the ProSe UE to transmit SLSS in each period (40ms) by configuring *syncTxThreshOoC* as +infinity in the pre-configured parameters. The ProSe UE is expected to synchronize to the SyncRef UE and transmit its own SLSS and SL-MIB in accordance to the procedure specified in clause 5.10.7.3 of TS 36.331.

The transmit timing is verified using the transmission timing of SLSS transmissions.

Table A.10.1.1-1: Test parameters for ProSe Transmission Timig Accuracy test for E-UTRAN FDD

	Parameter		Value	Comment
E-UTRA RF Char	E-UTRA RF Channel Number		1	
Channel Bandwic	Channel Bandwidth (BW _{channel})		5 or 10	According to principle defined in clause A.3.12.3
Active cell			None	
Active SyncRef L	JE		SyncRef UE 1	Transmitting SLSS+MIB- SL on uplink of RF channel number 1
	nmunication preconfiguration		As specified in Table A.3.12.5-2 (Configuration #2)	IE values unless specified otherwise in this test.
syncTxThreshOo	С		11 (+infinity)	
N_{oc}		dBm/15 kHz	-98	
	syncCP-Len		Normal	
	syncOffsetIndicator		Set same as syncOffsetIndicator1 in ProSe Direct Communication preconfiguration	
	slssid		30	
	inCoverage		TRUE	In MIB-SL
SyncRef UE 1	networkControlledSyncTx		ON	
	ProSe Direct Communication resource pool configuration		As specified in Table A.3.12.5-1 (Configuration #1)	IE values unless specified otherwise in this test; Note resource pool is same as Configuration #2 used by ProSe UE.
	\hat{E}_s/N_{oc}		3	
	S-RSRP Note1, Note 2		-95	
Propagation cond	dition		AWGN	

Note 1: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 2: SSSS Es/lot is set the same as PSSS/PSBCH Es/lot.

A.10.1.2 Test Requirements

For parameters specified in Tables A.10.1.1-1, the timing accuracy for ProSe Direct Communication transmissions shall be within the limits defined in clause 11.2.2. The timing accuracy is verified using SLSS transmissions.

Prior to start of test, test system is required to ensure that the ProSe UE is synchronized to the SyncRef UE 1 and is transmitting SLSS + MIB-SL as derived from the SLSS + MIB-SL of SyncRef UE 1 as per clause 5.10.7.3 of TS 36.331. For the test configuration, the SLSSID used by the ProSe UE shall be 30 with *inCoverage* IE in MIB-SL set as FALSE.

The following sequence of events shall be used to verify that the requirements are met.

For 5MHz or 10MHz channel bandwith, the test sequence shall be carried out in Any Cell Selection state.

- a) After the ProSe UE is synchronized to SyncRef UE 1, the test system shall verify that the ProSe UE SLSS transmission timing offset is within \pm 24×T_S with respect to the first detected path (in time) of the corresponding frame of SyncRef UE 1.
- b) The test system adjusts the transmit timing of SyncRef UE 1 by $+24 \times T_S$ compared to that in (a). The test system shall wait for at least one SLSS period (40ms) before verifying the requirement again in (c).
- c) The test system shall verify that the UE SLSS transmissiontiming offset stays within \pm 24×T_S with respect to the first detected path (in time) of the corresponding frame of SyncRef UE 1.

A.10.2 E-UTRAN FDD – Initiation/Cease of SLSS Transmission with ProSe Direct Communication

A.10.2.1 Test Purpose and Environment

The purpose of this test is to verify the requirements related to the evaluation time allowed to initiate and cease SLSS transmissions in Any Cell Selection state defined in clause 11.3.

For this test, the UE is triggered by the test loop function or the upper layers to transmit for ProSe Direct Communication.

The test parameters are given in Table A. X.2.1-1 and Table A.10.2.1-2 below. There are no active cells in this test. There is one active SyncRef UE (SyncRef UE 1) in this test. The test system shall emulate SyncRef UE 1 to transmit SLSS and MIB-SL every synchronization period.

Prior to start of test, test system is required to ensure that the ProSe UE is synchronized to the SyncRef UE 1 and is transmitting SLSS + MIB-SL as derived from the SLSS + MIB-SL of SyncRef UE 1 as per clause 5.10.7.3 of TS 36.331. For the test configuration, the SLSSID used by the ProSe UE shall be 30 with *inCoverage* IE in MIB-SL set as FALSE.

The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. During T1, the S-RSRP of SyncRef UE 1 is above *syncTxThreshOOC* and the UE is not expected to be transmitting SLSS. During T2, the S-RSRP of SyncRef UE 1 is lowered below *syncTxThreshOOC* and the UE is expected to initiate SLSS transmissions. During T3, the S-RSRP of SyncRef UE 1 is increased back to be above *syncTxThreshOOC* and the UE is expected to cease SLSS transmissions.

Table A.10.2.1-1: Test parameters for initiation/cease of SLSS transmissions test for E-UTRAN FDD

Parameter	Unit	Value	Comment
E-UTRA RF Channel Number		1	
Channel Bandwidth (BW _{channel})	MHz	5 or 10	According to principle defined in clause A.3.12.3
Active cell		None	
Active SyncRef UE		SyncRef UE 1	Transmitting SLSS+MIB- SL on uplink of RF channel number 1
ProSe Direct Communication preconfiguration		As specified in Table A.3.12.5-2 (Configuration #2)	IE values unless specified otherwise in this test.
syncTxThreshOoC	dBm/15 kHz	-95	
T1	S	3	
T2	S	5.24	
T3	S	5.24	

Table A.10.2.1-2: SyncRef UE specific test parameters for initiation/cease of SLSS transmissions test for E-UTRAN FDD

Parameter	Unit		SyncRef UE 1		
Parameter	Offic	T1	T2	T3	
E-UTRA RF Channel Number			1		
BW _{channel} Note 4	MHz		5 or 10		
		As spe	As specified in Table A.3.12.5-1		
ProSe Direct Communication resource pool		(Configuration #1)			
configuration			Note resource pool is same as Configuration		
		#2 used by ProSe UE.			
syncOffsetIndicator			Set same as syncOffsetIndicator1 in ProS		
Synconsettridicator		Direct Cor	Direct Communication preconfiguration		
slssid		30			
inCoverage		TRUE			
networkControlledSyncTx		ON			

N_{oc} Note1	dBm/15 kHz	-96			
\hat{E}_s/N_{oc}	dB	5.5	-3.5	5.5	
S-RSRP Note2, Note3	dBm/15 kHz	-90.5	-99.5	-90.5	
Propagation Condition		AWGN			
Note 1: Interference from other cells and noise sources not specified in the test is assumed to be constant over					
subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.					

RSRP levels have been derived from other parameters for information purposes. They are not settable

parameters themselves.

Note 3: SSSS Es/lot is set the same as PSSS/PSBCH Es/lot.

Note 4: This test is according to the principle defined in section A.3.12.3.

A.10.2.2 Test Requirements

The SLSS transmission initiation delay is defined as the time from the beginning of time period T2 up to the moment when the UE initiates the SLSS transmission.

The SLSS transmission initiation delay shall be less than 0.84 s.

The SLSS transmission cease delay is defined as the time from the beginning of time period T3 up to the moment when the UE ceases the SLSS transmission.

The SLSS transmission cease delay shall be less than 0.84 s.

The rate of correct initiation/cease delay of SLSS transmissions observed during repeated tests shall be at least 90%.

NOTE: The initiation/cease delay of SLSS transmissions can be expressed as: Tevaluate SLSS + SLSS period,

Where:

Note 2:

 $T_{evaluate,SLSS}$ is the evaluation time for initiate/cease of SLSS, and is 0.8 sec (clause 11.3.2) for the parameters in this test:

SLSS period is set as 40ms in this test.

A.10.3 E-UTRAN FDD – SyncRef UE Selection / Reselection Test

A.10.3.1 Test Purpose and Environment

The purpose of this test is to verify the requirements related to SyncRef UE selection / reselection in Any Cell Selection state defined in clause 11.5.

For this test, the UE is triggered by the test loop function or the upper layers to transmit for ProSe Direct Communication.

The test parameters are given in Table A. X.3.1-1 and Table A.10.3.1-2 below. There are no active cells in this test. There are two active SyncRef UEs (SyncRef UE 1 and SyncRef UE 2) in this test. The test system shall emulate SyncRef UE 1 and SyncRef UE 2 to transmit SLSS and MIB-SL every SLSS period (40ms).

The test system can verify the selection / reselection of SyncRef UE by monitoring the SLSS ID used by the ProSe UE for its SLSS+MIB-SL transmissions. When the ProSe UE is not synchronized to any SyncRef UE, then the ProSe UE shall use the SLSS ID pre-configured in the ProSe UE. When the ProSe UE is synchronized to a SyncRef UE, the ProSe UE shall derive its SLSS ID from the SLSS ID of the SyncRef UE as per clause 5.10.7.3 of TS 36.331.

The test consists of three successive time periods, with time duration of T1, T2 and T3 respectively. During T1, both SyncRef UE 1 and SyncRef UE 2 are powered off and the ProSe UE is expected to transmit SLSS as an independent synchronization source. During T1, SyncRef UE 1 is powered ON and the ProSe UE will select SyncRef UE 1 as the synchronization source. During T2, a higher priority SyncRef UE 2 is additionally powered ON and the ProSe UE will reselect to the higher priority SyncRef UE 2 as the synchronization source.

Table A.10.3.1-1: Test parameters for SyncRef UE selection/reselection test for E-UTRAN FDD

Pa	arameter	Unit	Value	Comment
Initial condition	Active synchronization		Independent	UE transmits for ProSe Direct
	source		synchronization	Communication and SLSS+MIB-SL
			source	with some random SLSS ID and in-
				coverage set as FALSE in MIB-SL.
T2 end condition	Active synchronization		Sync Ref UE 1	UE transmits for ProSe Direct
	source			Communication and SLSS+MIB-SL
				with SLSS ID = 168+59 and in-
				coverage set as FALSE in MIB-SL.
Final condition	Active synchronization		Sync Ref UE 2	UE transmits for ProSe Direct
	source			Communication and SLSS+MIB-SL
				with SLSS ID = 30 and in-coverage
				set as FALSE in MIB-SL.
E-UTRA RF Channel			1	
Channel Bandwidth (E	BW _{channel})	MHz	5 or 10	According to principle defined in
				clause A.3.12.3
Active cell			None	
Active SyncRef UEs			SyncRef UE 1	Transmitting SLSS+MIB-SL on
			SyncRef UE 2	uplink of RF channel number 1
Timing offset between	n SyncRef UE 1 and	ms	3	Asynchronous
SyncRef UE 2				
Frequency offset of S		ppm	0	
Frequency offset of S		ppm	5	
ProSe Direct Commu	nication preconfiguration		As specified in	IE values unless specified
			Table A.3.12.5-2	otherwise in this test.
			(Configuration #2)	
syncTxThreshOoC			11 (+infinity)	
T1		S	24	
T2		S	24	
T3		S	24	

Table A.10.3.1-2: SyncRef UE specific test parameters for SyncRef UE selection/reselection test for E-UTRAN FDD

Donomotor	Unit	S	yncRef UE	1	S	SyncRef UE	2
Parameter	Unit	T1	T2	Т3	T1	T2	Т3
E-UTRA RF Channel Number				,	1		
BW _{channel} Note 4	MHz			5 o	r 10		
ProSe Direct Communication		As specifi	ed in Table	A.3.12.5-2	As specifi	ed in Table	A.3.12.5-1
resource pool configuration		(Co	onfiguration	#2)	(Co	onfiguration	#1)
networkControlledSyncTx			N/A			ON	
syncTxThreshOoC	dBm/15 kHz		+infinity			N/A	
slssid			59		30		
inCoverage (in MIB-SL)			FALSE			TRUE	
syncOffsetIndicator		synd	OffsetIndica	ator2	synd	cOffsetIndica	ator1
$N_{\!oc}^{}$ Note1	dBm/15 kHz	-98					
\hat{E}_s/N_{oc}	dB	-infinity	16	16	-infinity	-infinity	13
$\hat{\mathrm{E}}_{\mathrm{s}}/\mathrm{I}_{\mathrm{ot}}$	dB	-infinity	16	2.79	-infinity	-infinity	-3.11
S-RSRP Note2, Note 3	dBm/15 kHz	-infinity -82 -82 -infinity			-infinity	-85	
Propagation Condition		AWGN					

Note 1: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 2: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 3: SSSS Es/lot is set the same as PSSS/PSBCH Es/lot.

Note 4: This test is according to the principle defined in section A.3.12.3.

A.10.3.2 Test Requirements

SyncRef UE selection delay is defined as the time from the beginning of T2 to the time UE is synchronized to SyncRef UE 1 and changes its SLSS transmissions timing and SLSS ID to follow SyncRef UE 1 as the synchronization source. For the test configuration, the SLSS ID will be changed to 168+59 (with in-coverage IE in MIB-SL set to FALSE) after SyncRef UE selection delay from start of T2.

The SyncRef UE selection delay shall be less than 20.84sec.

SyncRef UE reselection delay is defined as the time from the beginning of T3 to the time UE changes its synchronization source from SyncRef UE 1 to SyncRef UE 2, and changes its SLSS transmissions timing and SLSS ID to follow SyncRef UE 2 as the synchronization source. For the test configuration, the SLSS ID will be changed o 30 (with in-coverage IE in MIB-SL set to FALSE) after SyncRef UE selection delay from start of T3.

The SyncRef UE reselection delay shall be less than 20.84sec.

The rate of correct SyncRef UE selection / reselection observed during repeated tests shall be at least 90%.

The test system will verify that the ProSe UE does not drop or delay more than 2% of its SLSS transmissions during the duration of T1, T2, and T3.

The SyncRef UE selection/reselection delay can be expressed as:

 $SyncRef\ UE\ selection/reselection\ delay = T_{detect,SyncRef\ UE} + T_{evaluate,SLSS} + SLSS\ period$

Where

- $T_{\text{detect.SyncRef UE}} = 20 \text{sec}$ (as specified in sub-clause 11.5.2.2)
- $T_{\text{evaluate,SLSS}} = 0.8$ (as specified in sub-clause 11.3.2)
- SLSS period = 40ms

This gives a total of 20.84 seconds.

A.10.4 E-UTRAN FDD – Cell Identification on downlink frequency associated with ProSe frequency (when UE is transmitting for ProSe)

A.10.4.1 Test Purpose and Environment

The purpose of this test is to verify cell identification delay requirement for a newly detectable cell on the downink frequency associated with the pre-configured ProSe carrier frequency in Any Cell Selection state. This test will verify the requirements in clause 11.4 when the UE is transmitting for ProSe.

For this test, the UE is triggered by the test loop function or the upper layers to transmit for ProSe Direct Communication.

The test parameters are given in Table A. 10.4.1-1, Table A. 10.4.1-2, and Table A.10.4.1-3 below. There is one active cell (Cell 1) and active SyncRef UE (SyncRef UE 1) in this test. The test system shall emulate SyncRef UE 1 to transmit SLSS and MIB-SL every SLSS period (40ms).

The test consists of two successive time periods, with time duration of T1 and T2 respectively. During T1, the cell is powered OFF and the ProSe UE is synchronized to SyncRef UE 1. During T2, the cell is powered ON and the ProSe UE will detect the cell and attempt to camp on the cell.

Prior to start of test, test system is required to ensure that the ProSe UE is synchronized to the SyncRef UE 1 and is transmitting SLSS + MIB-SL as derived from the SLSS + MIB-SL of SyncRef UE 1 as per clause 5.10.7.3 of TS 36.331. For the test configuration, the SLSSID used by the ProSe UE shall be 30 with *inCoverage* IE in MIB-SL set as FALSE.

Table A.10.4.1-1: Test parameters for cell identification test on on downlink frequency associated with ProSe frequency for E-UTRAN FDD (when UE is transmitting for ProSe)

	Parameter	Unit	Value	Comment
Initial condition	Active synchronization source		Sync Ref UE 1	
Final condition	Active synchronization source		Cell1	
E-UTRA RF Cha	annel Number		1	
Channel Bandwi	idth (BW _{channel})	MHz	5 or 10	According to principle defined in clause A.3.12.3
Active cell			Cell1	
Active SyncRef	UEs		SyncRef UE 1	Transmitting SLSS+MIB-SL on uplink of RF channel number 1
ProSe Direct Co	mmunication preconfiguration		As specified in Table A.3.12.5-2 (Configuration #2)	IE values unless specified otherwise in this test.
syncTxThreshO	оС		11 (+infinity)	
T1		S	2	
T2		S	30	

Table A.10.4.1-2: Cell specific test parameters for cell identification test on on downlink frequency associated with ProSe frequency for E-UTRAN FDD (when UE is transmitting for ProSe)

Parameter	Unit	Cell 1		
Farameter	Onit	T1	T2	
E-UTRA RF Channel Number		1		
BW _{channel} Note 4	MHz	5 oı	r 10	
OCNG Patterns defined in A.3.2.1.2 Note 4		5 MHz: OP.16 FDD 10 MHz: OP.2 FDD		
PBCH_RA				
PBCH_RB				
PSS_RA				
SSS_RA				
PCFICH_RB				
PHICH_RA				
PHICH_RB	dB	0		
PDCCH_RA				
PDCCH_RB				
PDSCH_RA				
PDSCH_RB				
OCNG_RA ^{Note 1}				
OCNG_RB ^{Note 1}				
$N_{oc}^{$	dBm/15 kHz	-9	98	
\hat{E}_s/N_{oc}	dB	-infinity	-3	
RSRP Note3	dBm/15 kHz	-infinity	-101	
SCH_RP Note3	dBm/15 kHz	-infinity -101		
Propagation Condition		AW	GN	

Note 1: OCNG shall be used such that cell is fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Note 4: This test is according to the principle defined in section A.3.12.3.

Table A.10.4.1-3: SyncRef UE specific test parameters for cell identification test on on downlink frequency associated with ProSe frequency for E-UTRAN FDD

Parameter	Unit	Unit SyncRef UE 1	
Parameter		T1	T2
E-UTRA RF Channel Number		1 (Upl	ink)
BW _{channel} Note 4	MHz	5 or	10
ProSe Direct Communication resource pool configuration		As specified in Ta (Configura	
networkControlledSyncTx		ON	I
slssid		30	
inCoverage (in MIB-SL)		TRU	IE .
syncOffsetIndicator		syncOffsetI	ndicator1
$N_{oc}^{$	dBm/15 kHz	-98	3
\hat{E}_s/N_{oc}	dB	13	
S-RSRP Note2, Note3	dBm/15 kHz	-85	
Propagation Condition		AWO	SN

- Note 1: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{ac} to be fulfilled.
- Note 2: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.
- Note 3: SSSS Es/lot is set the same as PSSS/PSBCH Es/lot.
- Note 4: This test is according to the principle defined in section A.3.12.3.

A.10.4.2 Test Requirements

The cell selection delay to a newly detectable cell on the downlink associated with the preconfigured ProSe carrier is defined as the time from the beginning of T2 to the time UE camps on the cell and starts to send preambles on the PRACH for sending the RRC CONNECTION REQUEST.

The cell selection delay to a newly detectable cell on the downlink associated with the preconfigured ProSe carrier shall be less than 7.68 s.

The cell selection delay can be expressed as $T_{basic_identify_OoC_ProSe\ Tx_ON} + T_{SI},$ where

- $T_{basic_identify_OoC_ProSe\ Tx_ON} = 6.4sec$ as specified in sub-clause 11.4.2.2
- T_{SI} = Maximum repetition period of relevant system info blocks that needs to be received by the UE to camp on a cell; 1280 ms is assumed in this test case

This gives a total of 7.68 sec.

Annex B (normative):

Conditions for RRM requirements applicability for operating bands

B.1 Conditions for E-UTRAN RRC_IDLE state mobility

B.1.1 Conditions for measurements of intra-frequency E-UTRAN cells for cell re-selection

This clause defines the E-UTRAN intra-frequency RSRP, RSRP Ês/Iot, SCH_RP and SCH Ês/Iot applicable for a corresponding operating band.

The conditions for measurements of intra-frequency E-UTRAN cells for cell re-selection are defined in Table B.1.1-1.

Table B.1.1-1: Conditions for measurements of intra-frequency E-UTRAN cells for cell re-selection

Parameter	E-UTRA operating band groups Note 3	Minimum RSRP Note 1	Minimum SCH_RP Note 1	RSRP Ês/lot	SCH Ês/lot
		dBm/15kHz	dBm/15kHz	dB	dB
	FDD_A, TDD_A	-124	-124		
Conditions	FDD_B	-123.5	-123.5		
	FDD_C, TDD_C	-123	-123		
	FDD_D	-122.5	-122.5		
	FDD_E, TDD_E	-122	-122	≥ -4	≥ -4
	FDD_F	-121.5 Note 2	-121.5 Note 2		
	FDD_G	-121	-121		
	FDD_H	-120.5	-120.5		
	FDD_N	-117.5	-117.5		

NOTE 1: This condition level is increased by Δ >0, when applicable, as described in Section B.4.2.

NOTE 2: The condition is -122 dBm/15kHz when the carrier frequency of the assigned E-UTRA channel bandwidth is within 865-894 MHz.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

B.1.2 Conditions for measurements of inter-frequency E-UTRAN cells for cell re-selection

This clause defines the E-UTRAN inter-frequency RSRP, RSRP Ês/Iot, SCH_RP and SCH Ês/Iot applicable for a corresponding operating band.

The conditions for measurements of intra-frequency E-UTRAN cells for cell re-selection defined in Table B.1.1-1 also apply for inter-frequency E-UTRAN cells in this section.

B.2 Conditions for UE Measurements Procedures in RRC_CONNECTED State

B.2.1 Conditions for E-UTRAN intra-frequency measurements

This clause defines the E-UTRAN intra-frequency SCH_RP and SCH $\hat{E}s/Iot$ applicable for a corresponding operating band.

The conditions for intra-frequency E-UTRAN measurements are defined in Table B.2.1-1.

Table B.2.1-1: E-UTRAN intra-frequency measurements

Parameter	E-UTRA operating band groups Note 3	Minimum SCH_RP Note 1	SCH Ês/lot
		dBm/15kHz	dB
	FDD_A, TDD_A	-127	
	FDD_B	-126.5	
	FDD_C, TDD_C	-126	
	FDD_D	-125.5	
Conditions	FDD_E, TDD_E	-125	≥ -6
	FDD_F	-124.5 Note 2	
	FDD_G	-124	
	FDD_H	-123.5	
	FDD_N	-120.5	

NOTE 1: This condition level is increased by Δ >0, when applicable, as described in Sections B.4.2.

B.2.2 Conditions for E-UTRAN intra-frequency measurements with autonomous gaps

This clause defines the E-UTRAN intra-frequency SCH_RP and SCH Ês/Iot applicable for a corresponding operating band.

The conditions for intra-frequency E-UTRAN measurements with autonomous gap are as in Table B.2.1-1.

Table B.2.2-1: Void

B.2.3 Conditions for E-UTRAN inter-frequency measurements

This clause defines the E-UTRAN inter-frequency SCH_RP, SCH Ês/Iot, RSRP and RSRP Ês/Iot applicable for a corresponding operating band.

The conditions for inter-frequency E-UTRAN measurements with autonomous gap are defined in Table B.2.3-1.

Table B.2.3-1: E-UTRAN inter-frequency measurements

Parameter	E-UTRA operating band groups Note 3	Minimum RSRP Note 1	Minimum SCH_RP ^{Note 1}	RSRP Ês/lot	SCH Ês/lot
	groups	dBm/15kHz	dBm/15kHz	dB	dB
	FDD_A, TDD_A	-125	-125	≥ -4	≥ -4
	FDD_B	-124.5	-124.5		
	FDD_C, TDD_C	-124	-124		
	FDD_D	-123.5	-123.5		
Conditions	FDD_E, TDD_E	-123	-123		
	FDD_F	-122.5 Note 2	-122.5 Note 2		
	FDD_G	-122	-122		
	FDD_H	-121.5	-121.5		
	FDD_N	-118.5	-118.5		

NOTE 1: This condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 2: The condition is -125 dBm/15kHz when the carrier frequency of the assigned E-UTRA channel bandwidth is within 865-894 MHz.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

NOTE 2: The condition is -123 dBm/15kHz when the carrier frequency of the assigned E-UTRA channel bandwidth is within 865-894 MHz.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

B.2.4 Conditions for E-UTRAN inter-frequency measurements with autonomous gaps

This clause defines the E-UTRAN inter-frequency SCH_RP and SCH Ês/Iot applicable for a corresponding operating band.

The conditions for inter-frequency E-UTRAN measurements with autonomous gap are defined in Table B.2.4-1.

Table B.2.4-1: E-UTRAN inter-frequency measurements with autonomous gaps

Parameter	E-UTRA operating band groups Note 3	Minimum SCH_RP Note 1	SCH Ês/lot	
		dBm/15kHz	dB	
	FDD_A, TDD_A	-125		
	FDD_B	-124.5		
	FDD_C, TDD_C	-124		
	FDD_D	-123.5		
Conditions	FDD_E, TDD_E	-123	≥ -4	
	FDD_F	-122.5 Note 2		
	FDD_G	-122		
	FDD_H	-121.5		
	FDD N	-118.5	1	

NOTE 1: This condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 2: The condition is -123 dBm/15kHz when the carrier frequency of the assigned E-UTRA channel bandwidth is within 865-894 MHz.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

B.2.5 Conditions for E-UTRAN OTDOA intra-frequency RSTD Measurements

This clause defines the E-UTRAN intra-frequency PRP1,2 applicable for a corresponding operating band

The conditions for E-UTRAN OTDOA intra-frequency RSTD measurements are defined in Table B.2.5-1

Table B.2.5-1: E-UTRAN OTDOA intra-frequency RSTD measurements

Parameter	E-UTRA operating band groups Note 3	Minimum PRP1,2 Note 1
		dBm/15kHz
	FDD_A, TDD_A	-127
	FDD_B	-126.5
	FDD_C, TDD_C	-126
	FDD_D	-125.5
Conditions	FDD_E, TDD_E	-125
	FDD_F	-124.5 Note 2
	FDD_G	-124
	FDD_H	-123.5
	FDD_N	-120.5

NOTE 1: This condition level is increased by $\Delta > 0$, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 2: The condition is -125 dBm/15kHz when the carrier frequency of the assigned E-UTRA channel bandwidth is within 865-894 MHz.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

B.2.6 Conditions for E-UTRAN OTDOA inter-frequency RSTD Measurements

This clause defines the E-UTRAN inter-frequency PRP1,2 applicable for a corresponding operating band.

The conditions for E-UTRAN OTDOA inter-frequency RSTD measurements are defined in Table B.2.5-1.

B.2.7 Conditions for Measurements of the secondary component carrier with deactivated SCell

This clause defines the SCH_RP and SCH Ês/Iot for measurements in the secondary component carrier applicable for a corresponding operating band.

The conditions for measurements of the secondary component carrier with deactivated SCell are defined in Table B.2.7-1

Table B.2.7-1: Measurements of the secondary component carrier with deactivated SCell

Parameter	E-UTRA operating band groups Note 3	Minimum SCH_RP Note 1	SCH Ês/lot
		dBm/15kHz	dB
	FDD_A, TDD_A	-127	
	FDD_B	-126.5	
	FDD_C, TDD_C	-126	
	FDD_D	-125.5	
Conditions	FDD_E, TDD_E	-125	≥ -6
	FDD_F	-124.5 Note 2	
	FDD_G	-124	
	FDD_H	-123.5	
	FDD_N	-120.5	

NOTE 1: This condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

B.2.8 Conditions for E-UTRAN Intra-Frequency Measurements under Time Domain Measurement Resource Restriction

This clause defines the E-UTRAN intra-frequency SCH_RP and SCH $\hat{E}s/Iot$ applicable for a corresponding operating band.

The conditions for intra-frequency E-UTRAN measurements under time domain measurement resource restriction are defined in Table B.2.8-1.

Table B.2.8-1: E-UTRAN intra-frequency measurements under time domain measurement resource restriction

Parameter	E-UTRA operating band groups Note 3	Minimum SCH_RP Note 1	SCH Ês/lot
		dBm/15kHz	dB
	FDD_A, TDD_A	-127	
	FDD_B	-126.5	
	FDD_C, TDD_C	-126	
	FDD_D	-125.5	
Conditions	FDD_E, TDD_E	-125	≥ -7.5
	FDD_F	-124.5 Note 2	
	FDD_G	-124	
	FDD_H	-123.5	
	FDD_N	-120.5	

NOTE 1: This condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

NOTE 2: The condition is -125 dBm/15kHz when the carrier frequency of the assigned E-UTRA channel bandwidth is within 865-894 MHz.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

NOTE 2: The condition is -125 dBm/15kHz when the carrier frequency of the assigned E-UTRA channel bandwidth is within 865-894 MHz.

B.2.9 Conditions for E-UTRAN Intra-Frequency Measurements under Time Domain Measurement Resource Restriction with CRS Assistance Information

This clause defines the E-UTRAN intra-frequency SCH_RP and SCH Ês/Iot applicable for a corresponding operating band.

The conditions for intra-frequency E-UTRAN measurements under time domain measurement resource restriction with CRS assistance information are defined in Table B.2.9-1.

Table B.2.9-1: E-UTRAN intra-frequency measurements under time domain measurement resource restriction with CRS assistance information

Parameter	E-UTRA operating band groups Note 3	Minimum SCH_RP Note 1	SCH Ês/lot
		dBm/15kHz	dB
	FDD_A, TDD_A	-127	
	FDD_B	-126.5	
	FDD_C, TDD_C	-126	
	FDD_D	-125.5	
Conditions	FDD_E, TDD_E	-125	≥ -11.07
	FDD_F	-124.5 Note 2	
	FDD_G	-124	
	FDD_H	-123.5	
	FDD_N	-120.5	

NOTE 1: This condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 2: The condition is -125 dBm/15kHz when the carrier frequency of the assigned E-UTRA channel bandwidth is within 865-894 MHz.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

B.2.10 Conditions for E-UTRAN intra-frequency discovery signal measurements

This clause defines the E-UTRAN intra-frequency SCH_RP, SCH Ês/Iot in discovery signal occasions [16], applicable for a corresponding operating band for discovery signal measurements

The conditions for E-UTRAN intra-frequency discovery signal measurements are as in Table B.2.1-1.

B.2.11 Conditions for E-UTRAN inter-frequency discovery signal measurements

B.2.11.1 Conditions for E-UTRAN inter-frequency CRS-based measurements

This clause defines the E-UTRAN inter-frequency SCH_RP, SCH Ês/Iot, RSRP, and Ês/Iot in discovery signal occasions [16], applicable for a corresponding operating band for CRS based discovery signal measurements.

The conditions for E-UTRAN inter-frequency CRS-based discovery signal measurements in discovery signal occasions are specified in Table B.2.11.1-1.

Table B.2.11.1-1: E-UTRAN inter-frequency discovery signal measurements

Parameter	E-UTRA operating band groups Note 3	Minimum RSRP Note 1	Minimum SCH_RP Note 1	RSRP Ês/lot	SCH Ês/lot
	groups	dBm/15kHz	dBm/15kHz	dB	dB
	FDD_A, TDD_A	-125	-125		
	FDD_B	-124.5	-124.5		
	FDD_C, TDD_C	-124	-124		
	FDD_D	-123.5	-123.5		
Conditions	FDD_E, TDD_E	-123	-123	≥ -6	≥ -6
	FDD_F	-122.5 Note 2	-122.5 Note 2		
	FDD_G	-122	-122		
	FDD_H	-121.5	-121.5		
	FDD_N	-118.5	-118.5		

NOTE 1: This condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

B.2.11.2 Conditions for E-UTRAN inter-frequency CSI-RS based measurements

This clause defines the E-UTRAN inter-frequency SCH_RP, SCH Ês/Iot, CSI-RSRP, and CSI-RS Ês/Iot in discovery signal occasions [16], applicable for a corresponding operating band for CSI-RS based discovery signal measurements.

The conditions for E-UTRAN inter-frequency CRS-based discovery signal measurements in discovery signal occasions are specified in Table B.2.11.2-1.

Table B.2.11.2-1: E-UTRAN inter-frequency discovery signal measurements

Parameter	E-UTRA operating band groups Note 3	Minimum CSI- RSRP Note 1	Minimum SCH_RP Note 1	CSI-RS Ês/lot	SCH Ês/lot
	groups	dBm/15kHz	dBm/15kHz	dB	dB
	FDD_A, TDD_A	-125	-125		
	FDD_B	-124.5	-124.5		
	FDD_C, TDD_C	-124	-124		
	FDD_D	-123.5	-123.5		
Conditions	FDD_E, TDD_E	-123	-123	≥ 0	≥ -6
	FDD_F	-122.5 Note 2	-122.5 Note 2		
	FDD_G	-122	-122		
	FDD_H	-121.5	-121.5		
	FDD_N	-118.5	-118.5		

NOTE 1: This condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

B.2.12 Conditions for E-UTRAN intra-frequency discovery signal measurements under operation with frame structure 3

This section defines the E-UTRAN intra-frequency SCH_RP in discovery signal occasions [16], applicable for a corresponding operating band for discovery signal measurements under frame structure type 3.

The conditions for E-UTRAN intra-frequency discovery signal measurements are defined in Table B.2.12-1.

NOTE 2: The condition is -123 dBm/15kHz when the carrier frequency of the assigned E-UTRA channel bandwidth is within 865-894 MHz.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

NOTE 2: The condition is -123 dBm/15kHz when the carrier frequency of the assigned E-UTRA channel bandwidth is within 865-894 MHz.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

Table B.2.12-1: E-UTRAN intra-frequency measurements under operation with frame structure 3

Parameter	E-UTRA operating band groups Note 2	Minimum SCH_RP Note 1 dBm/15kHz
Conditions	FS3_G	-124
	is condition level is increased by Δ >0, when applicable, as described ir UTRA operating band groups are as defined in Section 3.5.	Sections B.4.2.

B.2.12 Conditions for E-UTRAN inter-frequency discovery signal measurements under operation with frame structure 3

B.2.12.1 Conditions for E-UTRAN inter-frequency CRS-based measurements

This section defines the E-UTRAN inter-frequency SCH_RP, SCH Ês/Iot, RSRP, and Ês/Iot in discovery signal occasions [16], applicable for a corresponding operating band for CRS based discovery signal measurements under frame structure 3.

The conditions for E-UTRAN inter-frequency CRS-based discovery signal measurements in discovery signal occasions are specified in Table B.2.12.1-1.

Table B.2.12.1-1: E-UTRAN inter-frequency discovery signal measurements

Parameter	E-UTRA operating band groups Note 2	Minimum RSRP Note 1	Minimum SCH_RP Note 1	RSRP Ês/lot	SCH Ês/lot
	groups	dBm/15kHz	dBm/15kHz	dB	dB
	FS3_G	-122	-122	≥ -6	≥ -6
NOTE 1: This condition level is increased by ∆>0, when applicable, as described in Sections B.4.2 and B.4.3.					
NOTE 2: E-	UTRA operating band groups are as	s defined in Section	3.5.		

B.2.12.2 Conditions for E-UTRAN inter-frequency CSI-RS based measurements

This section defines the E-UTRAN inter-frequency SCH_RP, SCH Ês/Iot, CSI-RSRP, and CSI-RS Ês/Iot in discovery signal occasions [16], applicable for a corresponding operating band for CSI-RS based discovery signal measurements.

The conditions for E-UTRAN inter-frequency CRS-based discovery signal measurements in discovery signal occasions under frame structure 3 are specified in Table B.2.12.2-1.

Table B.2.12.2-1: E-UTRAN inter-frequency discovery signal measurements

Parameter	E-UTRA operating band groups Note 2	Minimum CSI- RSRP Note 1	Minimum SCH_RP Note 1	CSI-RS Ês/lot	SCH Ês/lot	
	groups	dBm/15kHz	dBm/15kHz	dB	dB	
Conditions	FS3_G	-122	-122	≥ 0	≥ -6	
NOTE 1: This condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.						
NOTE 2: E-I	NOTE 2: E-UTRA operating band groups are as defined in Section 3.5.					

B.3 Conditions for measurements performance requirements for UE

B.3.1 Conditions for intra-frequency RSRP and RSRQ Accuracy Requirements

This clause defines the E-UTRAN intra-frequency RSRP applicable for a corresponding operating band.

The conditions for intra-frequency absolute RSRP and RSRQ accuracy requirements are defined in Table B.3.1-1.

Table B.3.1-1: Intra-frequency absolute RSRP and RSRQ Accuracy Requirements

Parameter	E-UTRA operating band groups Note 3	Minimum RSRP ^{Note 1}
		dBm/15kHz
	FDD_A, TDD_A	-127
	FDD_B	-126.5
	FDD_C, TDD_C	-126
	FDD_D	-125.5
Conditions	FDD_E, TDD_E	-125
	FDD_F	-124.5 Note 2
	FDD_G	-124
	FDD_H	-123.5
	FDD_N	-120.5

NOTE 1: This condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

B.3.2 Void

B.3.3 Conditions for inter-frequency RSRP and RSRQ Accuracy Requirements

This clause defines the E-UTRAN inter-frequency RSRP applicable for a corresponding operating band.

The conditions for inter-frequency absolute RSRP and RSRQ accuracy requirements are defined in Table B.3.1-1.

B.3.4 Conditions for inter-frequency relative RSRP and RSRQ Accuracy Requirements

This clause defines the E-UTRAN inter-frequency RSRP1,2 applicable for a corresponding operating band.

The conditions for inter-frequency relative RSRP and RSRQ accuracy requirements are defined in Table B.3.8-1.

B.3.5 Conditions for UE Rx – Tx time difference

This clause defines the E-UTRAN RSRP applicable for a corresponding operating band.

The conditions for UE Rx-Tx time difference are defined in Table B.3.1-1.

NOTE 2: The condition is -125 dBm/15kHz when the carrier frequency of the assigned E-UTRA channel bandwidth is within 865-894 MHz.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

B.3.6 Conditions for intra-frequency Reference Signal Time Difference (RSTD) measurements

This sections defines the E-UTRAN intra-frequency PRP applicable for a corresponding operating band.

The conditions for intra-frequency RSTD measurements are defined in Table B.2.5-1.

B.3.7 Conditions for inter-frequency RSTD measurements

This sections defines the E-UTRAN inter-frequency PRP applicable for a corresponding operating band.

The conditions for inter-frequency RSTD measurements are defined in Table B.2.5-1.

B.3.8 Conditions for Intra-Frequency Relative RSRP Accuracy Requirements

This clause defines the E-UTRAN intra-frequency RSRP1,2 applicable for a corresponding operating band.

The conditions for intra-frequency relative RSRP accuracy requirements are specified in Table B.3.8-1.

Table B.3.8-1: Intra-frequency relative RSRP accuracy requirements

Parameter	E-UTRA operating band groups Note 3	Minimum RSRP1,2 Note 1
		dBm/15kHz
	FDD_A, TDD_A	-127
	FDD_B	-126.5
	FDD_C, TDD_C	-126
	FDD_D	-125.5
Conditions	FDD_E, TDD_E	-125
	FDD_F	-124.5 Note 2
	FDD_G	-124
	FDD_H	-123.5
	FDD N	-120.5

NOTE 1: This condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 2: The condition is -125 dBm/15kHz when the carrier frequency of the assigned E-UTRA channel

bandwidth is within 865-894 MHz.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

B.3.9 Conditions for Intra-Frequency Absolute RSRP and RSRQ Accuracy Requirements under Time Domain Measurement Resource Restriction

This clause defines the E-UTRAN intra-frequency RSRP applicable for a corresponding operating band.

The conditions for intra-frequency absolute RSRP and RSRQ accuracy requirements under time domain measurement resource restriction are as specified in Table B.3.1-1.

B.3.10 Conditions for Intra-Frequency Relative RSRP Accuracy Requirements under Time Domain Measurement Resource Restriction

This clause defines the E-UTRAN intra-frequency RSRP1,2 applicable for a corresponding operating band.

The conditions for intra-frequency relative RSRP accuracy requirements under time domain measurement resource restriction are defined in Table B.3.8-1.

B.3.11 Conditions for Intra-Frequency Absolute RSRP and RSRQ Accuracy Requirements under Time Domain Measurement Resource Restriction with CRS Assistance Information

This clause defines the E-UTRAN intra-frequency RSRP applicable for a corresponding operating band.

The conditions for intra-frequency absolute RSRP and RSRQ accuracy requirements under time domain measurement resource restriction with CRS assistance information are as specified in Table B.3.1-1.

B.3.12 Conditions for Intra-Frequency Relative RSRP Accuracy Requirements under Time Domain Measurement Resource Restriction with CRS Assistance Information

This clause defines the E-UTRAN intra-frequency RSRP1,2 applicable for a corresponding operating band.

The conditions for intra-frequency relative RSRP accuracy requirements under time domain measurement resource restriction with CRS assistance information are as specified in Table B.3.8-1.

B.3.13 Conditions for UE Rx–Tx Time Difference Measurement under Time Domain Measurement Resource Restriction with CRS Assistance Information

This clause defines the E-UTRAN RSRP applicable for a corresponding operating band.

The conditions for UE Rx-Tx time difference measurements, when time domain measurement resource restriction pattern and CRS assistance information are provided, are as defined in Table B.3.1-1.

B.3.14 Conditions for Intra-Frequency Absolute Discovery Signal Measurement Accuracy Requirements

B.3.14.1 Conditions for Intra-frequency CRS-based measurements

This clause defines the intra-frequency RSRP in discovery signal occasions [16], applicable for a corresponding operating band for CRS based discovery signal measurements.

The conditions for intra-frequency absolute RSRP and RSRQ accuracy requirements for CRS-based discovery signal measurements in discovery signal occasions are as in Table B.3.1-1

B.3.14.2 Conditions for Intra-frequency CSI-RS-based measurements

This clause defines the intra-frequency CSI-RSRP in discovery signal occasions [16], applicable for a corresponding operating band for CSI-RS based discovery signal measurements.

The conditions for intra-frequency absolute CSI-RSRP accuracy requirements for CSI-RS-based discovery signal measurements in discovery signal occasions are specified in Table B.3.14.2-1

Table B.3.14.2-1: Intra-frequency Absolute CSI-RSRP Accuracy Requirements

Parameter	E-UTRA operating band groups Note 3	Minimum CSI-RSRP Note 1
		dBm/15kHz
	FDD_A, TDD_A	-127
	FDD_B	-126.5
	FDD_C, TDD_C	-126
	FDD_D	-125.5
Conditions	FDD_E, TDD_E	-125
	FDD_F	-124.5 Note 2
	FDD_G	-124
	FDD_H	-123.5
	FDD_N	-120.5

NOTE 1: This condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

B.3.15 Conditions for Intra-Frequency Relative Discovery Signal Measurement Accuracy Requirements

B.3.15.1 Conditions for Intra-frequency CRS-based measurements

This clause defines the intra-frequency RSRP in discovery signal occasions [16], applicable for a corresponding operating band for CRS based discovery signal measurements.

The conditions for intra-frequency relative RSRP accuracy requirements for CRS-based discovery signal measurements in discovery signal occasions are as in Table B.3.8-1

B.3.15.2 Conditions for Intra-frequency CSI-RS-based measurements

This clause defines the intra-frequency CSI-RSRP in discovery signal occasions [16], applicable for a corresponding operating band for CSI-RS based discovery signal measurements.

The conditions for intra-frequency relative CSI-RSRP accuracy requirements for CSI-RS-based discovery signal measurements in discovery signal occasions are specified in Table B.3.15.2-1

Table B.3.15.2-1: Intra-frequency Relative CSI-RSRP Accuracy Requirements

Parameter	E-UTRA operating band groups Note 3	Minimum CSI-RSRP1,2 Note 1
		dBm/15kHz
	FDD_A, TDD_A	-127
	FDD_B	-126.5
	FDD_C, TDD_C	-126
	FDD_D	-125.5
Conditions	FDD_E, TDD_E	-125
	FDD_F	-124.5 Note 2
	FDD_G	-124
	FDD_H	-123.5
	FDD N	-120.5

NOTE 1: This condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

NOTE 2: The condition is -125 dBm/15kHz when the carrier frequency of the assigned E-UTRA channel bandwidth is within 865-894 MHz.

NOTE 3: E-UTRA operating band groups are as defined in Section 3.5.

NOTE 2: The condition is -125 dBm/15kHz when the carrier frequency of the assigned E-UTRA channel bandwidth is within 865-894 MHz.

B.3.16 Conditions for Inter-Frequency Absolute Discovery Signal Measurement Accuracy Requirements

B.3.16.1 Conditions for Inter-frequency CRS-based measurements

This clause defines the inter-frequency RSRP in discovery signal occasions [16], applicable for a corresponding operating band for CRS based discovery signal measurements.

The conditions for inter-frequency absolute RSRP and RSRQ accuracy requirements for CRS-based discovery signal measurements in discovery signal occasions are as in Table B.3.1-1

B.3.16.2 Conditions for Inter-frequency CSI-RS-based measurements

This clause defines the inter-frequency CSI-RSRP in discovery signal occasions [16], applicable for a corresponding operating band for CSI-RS based discovery signal measurements.

The conditions for inter-frequency absolute CSI-RSRP accuracy requirements for CSI-RS-based discovery signal measurements in discovery signal occasions are as in Table B.3.14.2-1.

B.3.17 Conditions for Inter-Frequency Relative Discovery Signal Measurement Accuracy Requirements

B.3.17.1 Conditions for Inter-frequency CRS-based measurements

This clause defines the inter-frequency RSRP in discovery signal occasions [16], applicable for a corresponding operating band for CRS based discovery signal measurements.

The conditions for inter-frequency relative RSRP and RSRQ accuracy requirements for CRS-based discovery signal measurements in discovery signal occasions are as in Table B.3.8-1

B.3.17.2 Conditions for Inter-frequency CSI-RS-based measurements

This clause defines the inter-frequency CSI-RSRP in discovery signal occasions [16], applicable for a corresponding operating band for CSI-RS based discovery signal measurements.

The conditions for inter-frequency relative CSI-RSRP accuracy requirements for CSI-RS-based discovery signal measurements in discovery signal occasions are as in Table B.3.15.2-1.

B.3.18 Conditions for Intra-frequency Absolute RS-SINR Accuracy Requirements

This clause defines the E-UTRAN intra-frequency RSRP applicable for a corresponding operating band.

The conditions for intra-frequency absolute RS-SINR accuracy requirements are the same as defined in Table B.3.1-1.

B.3.19 Conditions for Inter-frequency Absolute RS-SINR Accuracy Requirements

This clause defines the E-UTRAN inter-frequency RSRP applicable for a corresponding operating band.

The conditions for inter-frequency absolute RS-SINR accuracy requirements are the same as defined in Table B.3.1-1.

B.3.20 Conditions for Inter-frequency Relative RS-SINR Accuracy Requirements

This clause defines the E-UTRAN inter-frequency RSRP1,2 applicable for a corresponding operating band.

The conditions for inter-frequency relative RS-SINR accuracy requirements are the same as defined in Table B.3.8-1.

B.3.23 Conditions for Intra-Frequency Absolute Accuracy Requirements for Measurements under Operation with Frame Structure 3

B.3.23.1 Conditions for RSRP measurements

This clause defines the intra-frequency absolute RSRP during the configured DMTC occasion [2] under operation with frame structure 3 [16], applicable for a corresponding operating band.

The conditions for intra-frequency absolute RSRP accuracy requirements are defined in Table B.3.23.1-1.

Table B.3.23.1-1: Intra-frequency absolute RSRP requirements

Parameter	E-UTRA operating band groups Note 2	Minimum RSRP Note 1						
		dBm/15kHz						
Conditions	FS3_G	-124						
NOTE 1: This condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.								
NOTE 2: E-UTRA operating band groups are as defined in Section 3.5.								

B.3.23.2 Conditions for RSRQ measurements

This clause defines the intra-frequency absolute RSRQ during the configured DMTC occasion [2] under operation with frame structure 3 [16], applicable for a corresponding operating band.

The conditions for intra-frequency absolute RSRQ accuracy requirements are the same as defined in Table B.3.23.1-1.

B.3.23.3 Conditions for CSI-RSRP measurements

This clause defines the intra-frequency absolute CSI-RSRP during the configured DMTC occasion [2] under operation with frame structure 3 [16], applicable for a corresponding operating band.

The conditions for intra-frequency absolute RSRP accuracy requirements are defined in Table B.3.23.3-1.

Table B.3.23.3-1: Intra-frequency absolute CSI-RSRP requirements

Parameter	E-UTRA operating band groups Note 2	Minimum CSI-RSRP Note 1						
		dBm/15kHz						
Conditions	FS3_G	-124						
NOTE 1: This condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.								
NOTE 2: E-UTRA operating band groups are as defined in Section 3.5.								

B.3.22 Conditions for Intra-Frequency Relative Accuracy Requirements for Measurements under Operation with Frame Structure 3

B.3.22.1 Conditions for RSRP measurements

This clause defines the intra-frequency relative RSRP during the configured DMTC occasion [2] under operation with frame structure 3 [16], applicable for a corresponding operating band.

The conditions for intra-frequency relative RSRP accuracy requirements are as defined in Table B.3.22.1-1.

Table B.3.22.1-1: Intra-frequency relative RSRP requirements

Parameter	E-UTRA operating band groups Note 2	Minimum RSRP1,2 Note 1					
		dBm/15kHz					
Conditions	FS3_G	-124					
NOTE 1: This condition level is increased by Δ>0, when applicable, as described in Sections B.4.2 and B.4.3.							
NOTE 2: E-	UTRA operating band groups are as defined in Section 3.5.						

B.3.22.2 Conditions for RSRQ measurements

This clause defines the intra-frequency relative RSRQ during the configured DMTC occasion [2] under operation with frame structure 3 [16], applicable for a corresponding operating band.

The conditions for intra-frequency relative RSRQ accuracy requirements are the same as defined in Table B.3.22.1-1.

B.3.22.3 Conditions for CSI-RSRP measurements

This clause defines the intra-frequency relative CSI-RSRP during the configured DMTC occasion [2] under operation with frame structure 3 [16], applicable for a corresponding operating band.

The conditions for intra-frequency relative CSI-RSRP accuracy requirements are as defined in Table B.3.22.3-1.

Table B.3.22.3-1: Intra-frequency relative CSI-RSRP requirements

Parameter	E-UTRA operating band groups Note 2	Minimum CSI-RSRP1,2 Note 1						
		dBm/15kHz						
Conditions	FS3_G	-124						
NOTE 1: This condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.								
NOTE 2: E-UTRA operating band groups are as defined in Section 3.5.								

B.3.23 Conditions for Inter-Frequency Absolute Accuracy Requirements for Measurements under Operation with Frame Structure 3

B.3.23.1 Conditions for RSRP measurements

This clause defines the inter-frequency absolute RSRP during the configured DMTC occasion [2] under operation with frame structure 3 [16], applicable for a corresponding operating band.

The conditions for inter-frequency absolute RSRP accuracy requirements are the same as defined in Table B.3.23.1-1.

B.3.23.2 Conditions for RSRQ measurements

This clause defines the inter-frequency absolute RSRQ during the configured DMTC occasion [2] under operation with frame structure 3 [16], applicable for a corresponding operating band.

The conditions for inter-frequency absolute RSRQ accuracy requirements are the same as defined in Table B.3.23.1-1.

B.3.23.3 Conditions for CSI-RSRP measurements

This clause defines the inter-frequency absolute CSI-RSRP during the configured DMTC occasion [2] under operation with frame structure 3 [16], applicable for a corresponding operating band.

The conditions for inter-frequency absolute CSI-RSRP accuracy requirements are the same as defined in Table B.3.23.3-1.

B.3.24 Conditions for Inter-Frequency Relative Accuracy Requirements for Measurements under Operation with Frame Structure 3

B.3.24.1 Conditions for RSRP measurements

This clause defines the inter-frequency relative RSRP during the configured DMTC occasion [2] under operation with frame structure 3 [16], applicable for a corresponding operating band.

The conditions for inter-frequency relative RSRP accuracy requirements are the same as defined in Table B.3.22.1-1.

B.3.24.2 Conditions for RSRQ measurements

This clause defines the inter-frequency relative RSRQ during the configured DMTC occasion [2] under operation with frame structure 3 [16], applicable for a corresponding operating band.

The conditions for inter-frequency relative RSRP accuracy requirements are the same as defined in Table B.3.22.1-1.

B.3.24.3 Conditions for CSI-RSRP measurements

This clause defines the inter-frequency relative CSI-RSRP during the configured DMTC occasion [2] under operation with frame structure 3 [16], applicable for a corresponding operating band.

The conditions for inter-frequency relative RSRP accuracy requirements are the same as defined in Table B.3.22.3-1.

B.4 RRM Requirements Exceptions

B.4.1 General

B.4.2 Receiver sensitivity relaxation for UE supporting CA

For a UE supporting inter-band carrier aggregation configuration with uplink in one E-UTRA band, if there is a relaxation of receiver sensitivity $\Delta R_{IB,c}>0$ dB as defined in TS 36.101 [5], Table 7.3.1-1A, the relevant side conditions specifying received power levels (E-UTRA RSRP, SCH_RP, PRP, CSI-RSRP, and Io) shall be increased by the amount $\Delta=\Delta R_{IB,c}$ defined for each of the downlink E-UTRA bands.

NOTE: This side condition adjustment applies only for a UE supporting a single inter-band LTE CA band combination. For a UE supporting additional inter-band LTE CA band combinations, the $\Delta R_{IB,c}$ for all bands supported by the UE, need to be studied [5].

B.4.3 Receiver sensitivity relaxation for UE configured with CA

B.4.3.1 Inter-band carrier aggregation

In this section, requirements exceptions are described for the UE configured with inter-band carrier aggregation with one uplink active in low operating band.

A relevant side condition (e.g., E-UTRA RSRP, SCH_RP, PRP, CSI-RSRP, and Io) in a requirement shall be increased by the amount Δ =L2-L1, where L1 is the reference sensitivity level specified in 36.101, Table 7.3.1-1, and L2 is the reference sensitivity level specified in 36.101, Table 7.3.1A-0a, when the following conditions are fulfilled,

- both downlink component carriers on different bands are configured with CA and active,
- the single uplink is active in the low operating band,
- the exception requirements specified in TS36.101, Table 7.3.1A-0a, apply.

If the relaxation Δ specified in this section applies, then the relaxation specified in Section B.4.2 should not be applied.

B.4.3.2 Intra-band non-contiguous carrier aggregation

For a UE configured with intra-band non-contiguous carrier aggregation configuration with uplink in one E-UTRA band, if there is a relaxation of receiver sensitivity $\Delta R_{IBNC}>0$ as defined in TS 36.101 [5], Table 7.3.1A-3, the relevant side conditions specifying received power levels (E-UTRA RSRP, SCH_RP, PRP, CSI-RSRP, and Io) shall be increased by the amount $\Delta=\Delta R_{IBNC}$ defined for the downlink SCC, when the following conditions are fulfilled,

- both downlink component carriers are configured with CA and active,
- one uplink carrier is active,
- the exception requirements specified in TS36.101, Table 7.3.1A-3, apply.

If the relaxation Δ specified in this section applies, then the relaxation specified in Section B.4.2 should not be applied.

B.4.3.3 Inter-band carrier aggregation with operating bands without uplink band

In this section, requirements are described for the UE configured with inter-band carrier aggregation involving one operating band without uplink band.

There is no relaxation in relevant side condition (e.g., E-UTRA RSRP, SCH_RP, PRP, CSI-RSRP, and Io) in a requirement, i.e., Δ =0, when the following conditions are fulfilled,

- both downlink component carriers on different bands are configured with CA and active,
- the single uplink is active in the high operating band,
- conditions specified in TS36.101, Table 7.3.1A-0d, apply.

If Δ specified in this section applies, then no other additional relaxation to REFSENS shall be applied.

B.5 Conditions for Measurement Performance Requirements for ProSe UE in Any Cell Selection State State

B.5.1 Conditions for S-RSRP Accuracy Requirements

This clause defines the S-RSRP applicable for a corresponding operating band.

The conditions for absolute S-RSRP accuracy requirements are defined in Table B.5.1-1.

Table B.5.1-1: Absolute S-RSRP Requirements

	E-UTRA ProSe operating band groups Note 3	Minimum S-RSRP Note 1
		dBm/15kHz
Parameter	FDD_D	-125.5
	FDD_E	-125
	FDD_F	-124.5 Note 2
	FDD_G	-124
	FDD_N	-120.5

- NOTE 1: This condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.
- NOTE 2: The condition is -125 dBm/15kHz when the carrier frequency of the assigned E-UTRA channel bandwidth is within 865-894 MHz.
- NOTE 3: E-UTRA ProSe operating band groups are as defined in Section 3.5 for the corresponding E-UTRA operating bands.

B.5.2 Conditions for Relative S-RSRP Accuracy Requirements

This clause defines the S-RSRP1,2 applicable for a corresponding operating band.

The conditions for relative S-RSRP accuracy requirements are specified in Table B.5.2-1.

Table B.5.2-1: Relative S-RSRP accuracy requirements

	E-UTRA ProSe operating band groups Note 3	Minimum S-RSRP1,2 Note 1
		dBm/15kHz
Doromotor	FDD_D	-125.5
Parameter	FDD_E	-125
	FDD_F	-124.5 Note 2
	FDD_G	-124
	FDD_N	-120.5

- NOTE 1: This condition level is increased by Δ >0, when applicable, as described in Sections B.4.2 and B.4.3.
- NOTE 2: The condition is -125 dBm/15kHz when the carrier frequency of the assigned E-UTRA channel bandwidth is within 865-894 MHz.
- NOTE 3: E-UTRA ProSe operating band groups are as defined in Section 3.5 for the corresponding E-UTRA operating bands.

B.5.3 Conditions for Selection/Seselection to Intra-frequency SyncRef UE

This clause defines the ProSe SCH_RP and SCH Ês/Iot applicable for a corresponding operating band.

The conditions for selection/reselection to intra-frequency SyncRef UE are defined in Table B.5.3-1.

Table B.5.3-1: ProSe synchronization measurements

	E-UTRA ProSe operating band groups Note 3	Minimum ProSe SCH_RP	ProSe SCH Ês/lot Note 4
		dBm/15kHz	dB
Parameter	FDD_D	-125.5	
	FDD_E	-125	
	FDD_F	-124.5 Note 2	≥ -4
	FDD_G	-124	
	FDD_N	-120.5	

- NOTE 1: This condition level is increased by $\Delta>0$, when applicable, as described in Sections B.4.2 and B.4.3.
- NOTE 2: The condition is -125 dBm/15kHz when the carrier frequency of the assigned E-UTRA channel bandwidth is within 865-894 MHz.
- NOTE 3: E-UTRA ProSe operating band groups are as defined in Section 3.5 for the corresponding E-UTRA operating bands.
- NOTE 4: ProSe SCH Ês/lot for a SyncRef UE is the minimum of the Ês/lot of PSSS/PSBCH and the Ês/lot of SSSS

Annex C (informative): Change history:

					Change History		
Date	TSG#	TSG Doc.	CR	Rev	Subject	Old	New
2007-12	RP#38	RP-071037			Approved version in TSG RAN#38	-	8.0.0
2008-03	RP#39	RP-080123	2		Updates of TS36.133	8.0.0	8.1.0
2008-05	RP#40	RP-080325	3		Updates of TS36.133	8.1.0	8.2.0
2008-09	RP#41	RP-080644	006	1	E-UTRAN TDD intra frequency measurements when DRX is used	8.2.0	8.3.0
2008-09	RP#41	RP-080644	800	1	E-UTRAN TDD - UTRAN TDD measurements	8.2.0	8.3.0
2008-09	RP#41	RP-080644	012		RSRQ reporting Range	8.2.0	8.3.0
2008-09	RP#41	RP-080644	018	1	Interfrequency and UTRA interRAT DRX peformance requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080644	020	1	Additions to UE transmit timing requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080644	043		Received interference power measurement performance requirement	8.2.0	8.3.0
2008-09	RP#41	RP-080644	044		Cell Synchronization requirement for E-UTRA TDD	8.2.0	8.3.0
2008-09	RP#41	RP-080644	047		Power Headroom Requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080644	048		Event Triggering and Reporting Criteria Capability Requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080642	004		Correction of E-UTRAN to UTRAN TDD handover	8.2.0	8.3.0
2008-09	RP#41	RP-080642	016	1	Definition of Symbols	8.2.0	8.3.0
2008-09	RP#41	RP-080642	019	1	Idle mode requirements updates	8.2.0	8.3.0
2008-09	RP#41	RP-080642	021	1	General updates to 36.133	8.2.0	8.3.0
2008-09	RP#41	RP-080642	023	1	Handover requirements for E-UTRAN to cdma200 HRPD/1x	8.2.0	8.3.0
2008-09	RP#41	RP-080642	024		Inter-frequency and inter-RAT measurement requirements for multiple layer monitoring	8.2.0	8.3.0
2008-09	RP#41	RP-080642	025		Side conditions for UE measurement procedures and measurement performance requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080642	026		Correction to cell reselection Requirement from E-UTRAN to HRPD/cdma200 1x	8.2.0	8.3.0
2008-09	RP#41	RP-080642	027		IRAT Measurement requirements in TS 36.133	8.2.0	8.3.0
2008-09	RP#41	RP-080713	022	1	Corrections to Handover requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713	028		Measurement reporting requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713	029	2	RRC re-establishment requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713	032		Correction to UE measurement requirements	8.2.0	8.3.0
2008-09	RP#41	RP-080713	033	4	Correction for the definition of interruption time	8.2.0	8.3.0
2008-09	RP#41	RP-080713	040	1	Correction to idle mode higher priority search requirements	8.2.0	8.3.0
2008-09 2008-09	RP#41 RP#41	RP-080713 RP-080713	045 046		E-UTRAN TDD inter frequency measurement requirements Updates of the Measurement procedures in RRC_Connected	8.2.0 8.2.0	8.3.0 8.3.0
					state from RAN 4#47bis and RAN 4#48		
2008-12	RP#42	RP-080919	53		Introduction of 700MHz Bands 12, 14 and 17	8.3.0	8.4.0
2008-12	RP#42	RP-080928	88	1	CR to 36.133 on Radio Link Failure Monitoring	8.3.0	8.4.0
2008-12	RP#42	RP-080929	51		Correction to idle mode requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080929	52		Definition of out of service area	8.3.0	8.4.0
2008-12	RP#42	RP-080929	54		Measurement requirements for UTRAN TDD cells in idle state	8.3.0	8.4.0
2008-12	RP#42	RP-080929	69	2	Correction of Inter-RAT UTRA cell reselection requirement	8.3.0	8.4.0
2008-12	RP#42	RP-080929	55		Correction of E_UTRAN cell measurement requirements in idle state	8.3.0	8.4.0
2008-12	RP#42	RP-080930	76		Correction to HO Requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080931	71		Random access requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080932	85		Cell phase synchronization error for large cell	8.3.0	8.4.0
2008-12	RP#42	RP-080932	63	4	Synchronization Requirements for E-UTRAN to 1xRTT and HRPD Handovers	8.3.0	8.4.0
2008-12	RP#42	RP-080933	49		E-UTRAN TDD-TDD intra/inter frequency measurement reporting requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080933	50		E-UTRAN FDD – UTRAN FDD Measurement reporting requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080933	58		Measurement requirement for E-UTRAN TDD to UTRAN TDD/FDD when DRX is used	8.3.0	8.4.0
2008-12	RP#42	RP-080933	60		Interfrequency and GSM measurement performance requirements in large DRX	8.3.0	8.4.0
2008-12	RP#42	RP-080933	62	1	Correction of implementation margin for transmission gap.	8.3.0	8.4.0
2008-12	RP#42	RP-080933	72		Alignement of DRX cycle dependent requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080933	73	1	Alignement of side conditions for mobility measurements	8.3.0	8.4.0

2008-12	RP#42	RP-080933	66	T 1	Manager models in PRC CONNECTED	8.3.0	0.40
2008-12	RP#42	RP-080933	66 78	1	Measurement models in RRC_CONNECTED Limitation of maximum number of layers for multiple	8.3.0	8.4.0 8.4.0
2000-12	131 #42	111-000933	'0	'	monitoring	0.3.0	0.4.0
2008-12	RP#42	RP-080933	83	1	GSM Cell identification requirements for parallel monitoring	8.3.0	8.4.0
2008-12	RP#42	RP-080933	87	1	UE transmit timing requirement	8.3.0	8.4.0
2008-12	RP#42	RP-080933	56		Correction of TS 36.133 clause 8.1.2.1.1.	8.3.0	8.4.0
2008-12	RP#42	RP-080934	77		Correction to RSRQ Report Mapping	8.3.0	8.4.0
2008-12	RP#42	KF-000934	86	1	Missing side conditions for RSRP and RSRQ	8.3.0	8.4.0
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2008-12	RP#42	RP-080935	81	1	Phase I RRM Test Cases	8.3.0	8.4.0
2008-12	RP#42		80	1	Test Configuration for RRM Tests: Measurement Reference Channels and OCNG	8.3.0	8.4.0
2008-12	RP#42	RP-080936	75		Cdma200 1xRTT Measurement Requirements	8.3.0	8.4.0
2008-12	RP#42	RP-080937	74	1	E-UTRA to UTRA cell search requirements for SON	8.3.0	8.4.0
2009-03	RP#43	RP-090182	101	1	Correction of A3-offset parameter in RRM test case	8.4.0	8.5.0
2009-03	RP#43	RP-090182	105		Some Editorial Corrections	8.4.0	8.5.0
2009-03	RP#43	RP-090182	145		Clarifications for the DRX state	8.4.0	8.5.0
2009-03	RP#43	RP-090183	89		Modification on measurements of UTRAN TDD cells	8.4.0	8.5.0
2009-03	RP#43	RP-090183	91		Clarification of the correct behavior when Treselection is not a multiple of idle mode reselection evaluation period	8.4.0	8.5.0
2009-03	RP#43	RP-090183	98		Clarification of 'Out of Service Area' Concept and Definition	8.4.0	8.5.0
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2009-03	RP#43	RP-090183	118		Radio link monitoring	8.4.0	8.5.0
2009-03	RP#43	RP-090183	142	1	Update of RRC_IDLE state mobility side conditions	8.4.0	8.5.0
2009-03	RP#43	RP-090183	150		UE measurement capability in Idle mode	8.4.0	8.5.0
2009-03	RP#43	RP-090184	133		Removal of RRC re-establishment procedure delay	8.4.0	8.5.0
2009-03	RP#43	RP-090184	138	1	Correction for the UE Re-establishment delay requirement	8.4.0	8.5.0
2009-03	RP#43	RP-090185	92	2	Cell phase synchronization accuracy	8.4.0	8.5.0
2009-03	RP#43	RP-090185	97		Radio link monitoring in DRX	8.4.0	8.5.0
2009-03	RP#43	RP-090185	120		UE Transmit Timing	8.4.0	8.5.0
2009-03	RP#43	RP-090185	137	1	Clarification of the reference point for the UE initial transmission timing control requirement	8.4.0	8.5.0
2009-03	RP#43	RP-090186	90		Correction of clause 8.1.2.2.2.2 in TS36.133	8.4.0	8.5.0
2009-03	RP#43	RP-090186	93	1	cdma2000 1xRTT and HRPD Measurement Requirements	8.4.0	8.5.0
2009-03	RP#43	RP-090186	94		Event Triggered Periodic Reporting Requirements for IRAT Measurements	8.4.0	8.5.0
2009-03	RP#43	RP-090186	95		Measurement Reporting Requirements for E-UTRAN TDD – UTRAN TDD Measurements	8.4.0	8.5.0
2009-03	RP#43	RP-090186	99	1	Clarification of UE behavior when measurement gap is used	8.4.0	8.5.0
2009-03	RP#43	RP-090186	100		E-UTRA to UTRA cell search requirements in DRX for SON	8.4.0	8.5.0
2009-03	RP#43	RP-090186	110	1	Correction to GSM BSIC Requirements for Parallel Monitoring	8.4.0	8.5.0
2009-03	RP#43	RP-090186	117		Alignment of terminology for GAP	8.4.0	8.5.0
2009-03	RP#43	RP-090186	134		Inter frequency and Inter RAT cell search requirement when DRX is used	8.4.0	8.5.0
2009-03	RP#43	RP-090186	139		Correction of E-UTRAN FDD – UTRAN FDD measurements when no DRX	8.4.0	8.5.0
2009-03	RP#43	RP-090186	146		Addition of the definition of "when DRX is used"	8.4.0	8.5.0
2009-03	RP#43	RP-090186	147	1	Corrections to E-UTRAN inter-frequency side conditions	8.4.0	8.5.0
2009-03	RP#43	RP-090187	96		Correction to Intra-frequency RSRP Accuracy Requirements	8.4.0	8.5.0
2009-03	RP#43	RP-090187	136	1	Power Headroom reporting delay	8.4.0	8.5.0
2009-03	RP#43	RP-090370	103	1	E-UTRAN -GSM Handover Test Case	8.4.0	8.5.0
2009-03	RP#43	RP-090370	104	1	E-UTRAN FDD - UTRAN TDD Cell Search Test Cases in Fading	8.4.0	8.5.0
	RP#43	RP-090370	106	1	E-UTRA FDD to UTRA FDD Handover Test Case	8.4.0	8.5.0

2009-03	RP#43	RP-090370	107	1	Correction of E-UTRA FDD-FDD Intra-frequency cell reselection test case	8.4.0	8.5.0
2009-03	RP#43	RP-090370	108	1	Correction of E-UTRA FDD-FDD priority based Inter-	8.4.0	8.5.0
2009-03	RP#43	RP-090370	111		frequency cell reselection test case E-UTRAN TDD - UTRAN FDD Handover Test Case	8.4.0	8.5.0
2009-03	RP#43	RP-090370	112	1	E-UTRAN FDD - GSM Cell Search Test Case in AWGN	8.4.0	8.5.0
2009-03	RP#43	RP-090370	113	<u> </u>	E-UTRAN - UTRAN FDD Cell Search Test Cases in Fading	8.4.0	8.5.0
2009-03	RP#43	RP-090370	114	1	E-UTRAN UE Timing Accuracy Related Test Cases	8.4.0	8.5.0
2009-03	RP#43	RP-090370	115	1	Inclusion of MBSFN Configurations for RRM Test Cases	8.4.0	8.5.0
2009-03	RP#43	RP-090370	116		E-UTRAN FDD HRPD Cell Reselection Test Case; HRPD of Low Priority	8.4.0	8.5.0
2009-03	RP#43	RP-090370	122	1	Clarification on Annex A.9: Measurement performance requirements	8.4.0	8.5.0
2009-03	RP#43	RP-090370	125		E-UTRA TDD – UTRA TDD cell reselection: UTRA is of	8.4.0	8.5.0
2009-03	RP#43	RP-090370	126		higher priority E-UTRA TDD – UTRA TDD cell reselection: UTRA is of lower priority	8.4.0	8.5.0
2009-03	RP#43	RP-090370	127		E-UTRA FDD – UTRA TDD cell reselection	8.4.0	8.5.0
2009-03	RP#43	RP-090370	128	1	E-UTRA TDD-UTRA TDD cell search (fading)	8.4.0	8.5.0
2009-03	RP#43	RP-090370	129	1	E-UTRA TDD-UTRA TDD handover	8.4.0	8.5.0
2009-03	RP#43	RP-090370	132	1	Addition of E-UTRA FDD to UTRA FDD reselection test cases	8.4.0	8.5.0
2009-03	RP#43	RP-090370	141	1	Correction and introduction of some test related parameters	8.4.0	8.5.0
2009-03	RP#43	RP-090370	143		Description of Annex A in TS 36.133	8.4.0	8.5.0
2009-03	RP#43	RP-090370	148		Reselection from E-UTRA to GSM cell test case	8.4.0	8.5.0
2009-03	RP#43	RP-090370	149		Radio Link Monitoring Test Cases	8.4.0	8.5.0
2009-05	RP#44	RP-090546	151		E-UTRA FDD UTRA TDD HO delay test case	8.5.0	8.6.0
2009-05	RP#44	RP-090546	153		Correction of CQI reporting periodicity for TDD RLM test	8.5.0	8.6.0
2000 05	DD#44	DD 000546	157		Cases	0.5.0	8.6.0
2009-05	RP#44	RP-090546	157		Correction to inter RAT reselection requirements to exclude equal priority. (Technically Endorsed CR in R4-50bis - R4-091092)	8.5.0	8.6.0
2009-05	RP#44	RP-090546	167		Clarification of the number of monitoring carriers in idle mode. (Technically Endorsed CR in R4-50bis - R4-091394)	8.5.0	8.6.0
2009-05	RP#44	RP-090546	180		Correction of Core spec references in A.9 Measurements performance test cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	984		UTRA FDD-E-UTRA FDD/ TDD handover test cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	184		SON ANR UTRAN FDD Cell Search Test Case	8.5.0	8.6.0
2009-05	RP#44	RP-090546	187		E-UTRAN FDD cdma2000 1x RTT Cell Reselection Test Case; Cdma2000 1X of Low Priority	8.5.0	8.6.0
2009-05	RP#44	RP-090546	188		E-UTRAN FDD cdma2000 HO Test cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	190		E-UTRAN Random Access Test Cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	191		E-UTRAN RRC Re-establishment Test Cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	192		E-UTRAN TDD - GSM Cell Search Test Case in AWGN	8.5.0	8.6.0
2009-05	RP#44	RP-090546	197		Correction to E-UTRAN FDD - GSM Handover Test case	8.5.0	8.6.0
2009-05	RP#44	RP-090546	173	1	Correction of cell reselection test cases	8.5.0	8.6.0
2009-05	RP#44	RP-090546	179	1	Test cases of E-UTRA TDD intra-frequency cell search in fading environment when DRX is used	8.5.0	8.6.0
2009-05	RP#44	RP-090546	152	1	E-UTRA TDD GSM handover test case	8.5.0	8.6.0
2009-05	RP#44	RP-090546	178	1	Test cases of E-UTRA FDD intra-frequency cell search in fading environment when DRX is used	8.5.0	8.6.0
2009-05	RP#44	RP-090546	201	1	Test case for E-UTRA FDD E-UTRA FDD inter frequency cell search when DRX is used in fading conditions	8.5.0	8.6.0
2009-05	RP#44	RP-090546	185	1	Correction to Radio Link Monitoring Tests	8.5.0	8.6.0
2009-05	RP#44	RP-090546	203		Correction to E-UTRAN FDD to HRPD Cell Reselection Test Case	8.5.0	8.6.0
2009-05	RP#44	RP-090546	177	1	Introduction of New Reference Channels and OCNG Patterns for 1.4MHz Bandwidth	8.5.0	8.6.0
2009-05	RP#44	RP-090546	200	2	Test case for E-UTRA TDD E-UTRA TDD inter frequency cell search when DRX is used in fading conditions	8.5.0	8.6.0
2009-05	RP#44	RP-090547	158		Alignment of inter frequency and inter RAT RRM reselection testcases with core requirements. (Technically Endorsed CR in R4-50bis - R4-091094)	8.5.0	8.6.0
2009-05	RP#44	RP-090547	160		Correction relating E-UTRAN TDD - UE Transmit Timing Accuracy Tests. (Technically Endorsed CR in R4-50bis - R4- 091198)	8.5.0	8.6.0
2009-05	RP#44	RP-090547	165		Modifications of T3 and the verification point for in-sync test cases. (Technically Endorsed CR in R4-50bis - R4-091386)	8.5.0	8.6.0
2009-05	RP#44	RP-090547	172		E-UTRAN UE Timing Accuracy Related Test Cases. (Technically Endorsed CR in R4-50bis - R4-091517)	8.5.0	8.6.0
2009-05	RP#44	RP-090547	171	1	Reference measurement Channels for Radio Link Monitoring	8.5.0	8.6.0

2009-05 RP#44 RP-090548 170						50bis - R4-091508)		
2009-05 RP#44 RP-090548 195 Correction to Inter-RAT HO Interruption Time Definition 8.5.0 8 2009-05 RP#44 RP-090548 196 CR c2k RR6 delay 8.5.0 8 2009-05 RP#44 RP-090548 196 CR c2k interruption time 8.5.0 8 2009-05 RP#44 RP-090548 196 Carlifications to UE UL timing requirements. (Technically 8.5.0 8 2009-05 RP#44 RP-090548 196 Corrections of Parthagon Requirements 8.5.0 8 2009-05 RP#44 RP-090548 154 Corrections of TGRP in clause 8.1.2.1.1 8.5.0 8 2009-05 RP#44 RP-090549 161 Corrections of TGRP in clause 8.1.2.1.1 8.5.0 8 2009-05 RP#44 RP-090549 161 E-UTRAN UTRAN HO Command Processing Delay 8.5.0 8 2009-05 RP#44 RP-090549 161 E-UTRAN UTRAN HO Command Processing Delay 8.5.0 8 2009-05 RP#44 RP-090549 161 E-UTRAN UTRAN HO Command Processing Delay 8.5.0 8 2009-05 RP#44 RP-090550 156 Corrections of Cell Reselection Requirements in Ide Mode 8.5.0 8 2009-05 RP#44 RP-090550 156 Corrections of Cell Reselection Requirements 8.5.0 8 2009-05 RP#44 RP-090550 156 Correction to the Reference Glause Number for Tetert. 8.5.0 8 2009-05 RP#44 RP-090551 166 E-UTRAN HO Correction to the Reference Glause Number for Tetert. 8.5.0 8 2009-05 RP#44 RP-090551 2009-05 RP#45 RP-090580 200	2009-05	RP#44	RP-090548	170		Misalignment between TS36.133 and TS36.321. (Technically	8.5.0	8.6.0
2009-05 RP#44 RP-090548 196 CR c2k interruption time 8.5.0 8 2009-05 RP#44 RP-090548 162 Clarifications to UE UL timing requirements. (Technically Endorsed CR in R4-50bis - R4-091357) 8.5.0 8 2009-05 RP#44 RP-090548 176 Correction of Random Access Requirements 8.5.0 8 2009-05 RP#44 RP-090548 168 Correction of TGRP in clause 8.1.2.1.1 8.5.0 8 2009-05 RP#44 RP-090548 168 Correction for TGRP in clause 8.1.2.1.1 8.5.0 8 2009-05 RP#44 RP-090549 161 Califications for the Relative RSRP and RSRQ measurement requirements. (Technically Endorsed CR in R4-50bis - R4-091407) RP#44 RP-090549 175 Corrections for the Relative RSRP and RSRQ measurement requirements. (Technically Endorsed CR in R4-50bis - R4-091407) RP#44 RP-090549 175 Corrections of Cell Reselection Requirements in Idle Mode 8.5.0 8 RP#44 RP-090549 181 2 Removal of [1 from ranking criteria in Idle mode 2.5.0 8 RP#44 RP-090550 156 Correction on the TDD-TDD inter frequency measurements. (Technically Endorsed CR in R4-50bis - R4-091153) RP#44 RP-090550 159 Correction on the TDD-TDD inter frequency measurements. (Technically Endorsed CR in R4-50bis - R4-091153) RP#44 RP-090551 166 Further clarification of DR/Mon-DRX state. (Technically 8.5.0 8 RP#44 RP-090551 166 Further clarification of DR/Mon-DRX state. (Technically 8.5.0 8 R4-09059 RP#44 RP-090551 169 CORRECTION R4-50bis - R4-091183) R4-09059 RP#44 RP-090551 169 CORRECTION R4-60bis - R4-091083) R4-09059 RP#44 RP-090559 155 Introduction of Extended LTE800 requirements. (Technically 8.5.0 8 R4-091410) R4-09059 RP#44 RP-090599 155 Introduction of Reference DRX configurations 9.0.0 9 RP#45 RP-090880 205 Correction to TDP RMC references in RA-091683) 8.5.0 8 R4-091680	2009-05	RP#44	RP-090548	193			8.5.0	8.6.0
2009-05 RP#44 RP-090548 162 Clarifications to UE UL timing requirements. (Technically 8.5.0 8 2009-05 RP#44 RP-090548 176 Correction of Random Access Requirements 8.5.0 8 2009-05 RP#44 RP-090548 168 Correction of TGRP in clause 8.1.2.1.1 8.5.0 8 2009-05 RP#44 RP-090548 168 Clarifications for the Relative RSRP and RSRC 8.5.0 8 Research Relative RSRP and RSRC RSRC	2009-05	RP#44	RP-090548	195		CR c2k RRC delay	8.5.0	8.6.0
Endorsed CR in R4-50bis - R4-091577 8.5.0 8	2009-05	RP#44	RP-090548	196			8.5.0	8.6.0
2009-05 RP#44 RP-090548 158	2009-05	RP#44	RP-090548	162			8.5.0	8.6.0
2009-05 RP#44 RP-090549 161 Clarifications for the Relative RSRP and RSRQ measurement requirements. (Technically Endorsed CR in R4-50bis - R4-091247) 8.5.0 8 R4-50bis - R4-091407) 8.5.0 8 R4-50bis - R4-091247 R4-50bis - R4-091247 R4-091247 R4-091247 R4-091247 R4-091247 R4-091247 R5-090549 181 2 R4-091247 R5-090549 R7-44 R7-090549 181 2 R4-091247 R5-090549 R7-44 R7-090559 181 2 R4-091247 R5-090559 R7-44 R7-090559 R7-44 R7-090550 156 Correction of the TDD-TDD inter frequency measurements. R5-090-05 R7-44 R7-090550 R7-44 R7-090550 R7-44 R7-090550 R7-44 R7-090551 R7-090550 R7-44 R7-090551 R7-090	2009-05	RP#44	RP-090548	176		Corrections of Random Access Requirements	8.5.0	8.6.0
measurement requirements. (Technically Endorsed CR in R4-50bis - R4-091407)	2009-05	RP#44	RP-090548	154			8.5.0	8.6.0
R4-50his - R4-091407 S-5.0 8 R-444 RP-090549 161 E-UTRAN UTRAN HO Command Processing Delay. (Technically Endorsed CR in R4-50his - R4-091291) S-5.0 8 R-944 RP-090549 175 Corrections of Cell Reselection Requirements in Idle Mode S.5.0 8 R-944 RP-090549 181 2 Removal of Tom ranking criteria in Idle mode cell R-945 R-900550 R-944 RP-090550 156 Correction on the TD-TDD inter frequency measurements. R-950 R-944 RP-090550 R-944 RP-090550 R-944 RP-090550 R-944 RP-090550 R-944 RP-090550 R-944 RP-090551 R-945 RP-090551 R-945 RP-090551 R-945 R-900551 2009-05	RP#44	RP-090548	168			8.5.0	8.6.0	
Technically Endorsed CR in R4-50bis - R4-091291)						R4-50bis - R4-091407)		
2009-05 RP#44 RP-090550 156 Correction to Horozoft (China Proposition of Part Response) 156 Correction on the TDD-TDD inter frequency measurements, 1, 2009-05 RP#44 RP-090550 159 Correction on the TDD-TDD inter frequency measurements, 1, 2009-05 RP#44 RP-090551 169 Correction to the Referenced Clause Number for Tinter1, 1, 1, 2009-05 RP#44 RP-090551 166 Further clarification of DRX/Non-DRX state, (Technically Endorsed CR in R4-50bis, -R4-091153) 8.5.0 8 Endorsed CR in R4-50bis, -R4-091369 RP#44 RP-090551 169 Correction to Technically Endorsed CR in R4-50bis, -R4-091369 8.5.0 8 RP#44 RP-090551 169 CORRESTION on reference to 30PP2 specification (Section on Reference to 30PP2 specification) 8.5.0 8 RP#44 RP-090559 155 Introduction of Extended LTE800 requirements, (Technically Endorsed CR in R4-50bis, -R4-091164) 8.6.0 9 RP#45 RP-090817 211 Correction to TDD RMC references in RLM test cases 0.0.0 9 2009-05 RP#45 RP-09080 205 Introduction of Reference DRX configurations 0.0.0 9 2009-05 RP#45 RP-090880 207 Addition of DRX configurations into non DRX test cases 0.0.0 9 2009-05 RP#45 RP-090880 227 Correction to TD Test Cases 0.0.0 9 2009-05 RP#45 RP-090880 227 Correction to E-UTRAN GSM BSIC Identification 0.0.0 9 2009-05 RP#45 RP-090880 227 Correction to E-UTRAN GSM BSIC Identification 0.0.0 9 2009-05 RP#45 RP-090880 259 Correction to E-UTRAN FDD and UTRA FDD cell search test 0.0.0 9 2009-05 RP#45 RP-090880 259 Correction to E-UTRAN FDD and UTRA FDD cell search test 0.0.0 9 2009-05 RP#45 RP-090880 314 E-UTRA FDD -E-UTRA FDD and UTRA FDD cell search test 0.0.0 9 2009-05 RP#45 RP-090880 315 E-UTRAN Radio Link Monitoring Test Cases in DRX 0.0.0 9 2009-05 RP#45 RP-090880 315 E-UTRAN Radio Link Monitoring Test Cases in DRX 0.0.0 9 2009-05 RP#45 RP-090880 263 2 E-UTRAN GSM Cell Search						(Technically Endorsed CR in R4-50bis - R4-091291)		8.6.0
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Endorsed CR in R4-50bis - R4-091389] Endorsed CR in R4-50bis - R4-091389] Endorsed CR in R4-50bis - R4-091389] Endorsed CR in R4-50bis - R4-091410] Endorsed CR in R4-50bis - R4-091083] Endorsed CR in R						(Technically Endorsed CR in R4-50bis - R4-091153)		8.6.0
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Description						unknown target cell		9.1.0
2009-05 RP#45 RP-090836 267 Set 3.2. E-UTRA TDD to UTRA TDD cell search in DRX under fading 9.0.0 9 2009-05 RP#45 RP-090836 269 Set 3.6. Test case of E-UTRA TDD to E-UTRA TDD and UTRA TDD combined cell search under fading 9.0.0 9 2009-05 RP#45 RP-090836 271 Set 3.12. E-UTRA TDD to UTRA TDD blind handover test 9.0.0 9 2009-05 RP#45 RP-090836 279 E-UTRAN FDD - UTRAN FDD Cell Search in DRX Test Cases 9.0.0 9 2009-05 RP#45 RP-090836 281 E-UTRAN TDD- E-UTRAN TDD and E-UTRAN TDD Interfrequency Cell Search Test Case 9.0.0 9 2009-05 RP#45 RP-090836 283 E-UTRAN GSM Blind Handover Test Cases 9.0.0 9 2009-05 RP#45 RP-090836 287 E-UTRAN FDD cdma2000 Blind HO Test cases 9.0.0 9 2009-05 RP#45 RP-090836 302 RRM Test case for multiple E-UTRAN FDD-FDD Interfrequency event triggered reporting under fading propagation conditions 9.0.0 9 2009-05 RP#45 RP-090836 304						parameters		9.1.0
Under fading					1			9.1.0
UTRA TDD combined cell search under fading						under fading		9.1.0
2009-05 RP#45 RP-090836 279 E-UTRAN FDD - UTRAN FDD Cell Search in DRX Test Cases 9.0.0 9 2009-05 RP#45 RP-090836 281 E-UTRAN TDD- E-UTRAN TDD and E-UTRAN TDD Interfrequency Cell Search Test Case 9.0.0 9 2009-05 RP#45 RP-090836 283 E-UTRAN GSM Blind Handover Test Cases 9.0.0 9 2009-05 RP#45 RP-090836 287 E-UTRAN FDD cdma2000 Blind HO Test cases 9.0.0 9 2009-05 RP#45 RP-090836 302 RRM Test case for multiple E-UTRAN FDD-FDD Interfrequency event triggered reporting under fading propagation conditions 9.0.0 9 2009-05 RP#45 RP-090836 304 Fading reselection test case between E-UTRA and UTRA (UTRA of lower priority) 9.0.0 9 2009-05 RP#45 RP-090879 215 1 Corrections to Measurements of HRPD cells and cdma2000 9.0.0 9 2009-05 RP#45 RP-090879 231 CR reference correction 9.0.0 9 2009-05 RP#45 RP-090879 231 CR reference correction						UTRA TDD combined cell search under fading		9.1.0
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2009-05 RP#45 RP-090836 287 E-UTRAN FDD cdma2000 Blind HO Test cases 9.0.0 9 2009-05 RP#45 RP-090836 302 RRM Test case for multiple E-UTRAN FDD-FDD Interfrequency event triggered reporting under fading propagation conditions 9.0.0 9 2009-05 RP#45 RP-090836 304 Fading reselection test case between E-UTRA and UTRA (UTRA of lower priority) 9.0.0 9 2009-05 RP#45 RP-090828 233 CR SI HRPD correction 9.0.0 9 2009-05 RP#45 RP-090879 215 1 Corrections to Measurements of HRPD cells and cdma2000 9.0.0 9 2009-05 RP#45 RP-090879 231 CR reference correction 9.0.0 9 2009-05 RP#45 RP-090879 235 1 Corrections to Measurements of GSM cells in RRC_IDLE 9.0.0 9 2009-05 RP#45 RP-090879 247 Range of Idle Mode Es/lot side conditions 9.0.0 9						frequency Cell Search Test Case		9.1.0
2009-05 RP#45 RP-090836 302 RRM Test case for multiple E-UTRAN FDD-FDD Interfrequency event triggered reporting under fading propagation conditions 9.0.0 9 2009-05 RP#45 RP-090836 304 Fading reselection test case between E-UTRA and UTRA (UTRA of lower priority) 9.0.0 9 2009-05 RP#45 RP-090828 233 CR SI HRPD correction 9.0.0 9 2009-05 RP#45 RP-090879 215 1 Corrections to Measurements of HRPD cells and cdma2000 9.0.0 9 2009-05 RP#45 RP-090879 231 CR reference correction 9.0.0 9 2009-05 RP#45 RP-090879 235 1 Corrections to Measurements of GSM cells in RRC_IDLE 9.0.0 9 2009-05 RP#45 RP-090879 247 Range of Idle Mode Es/lot side conditions 9.0.0 9								9.1.0
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2009-05 RP#45 RP-090879 215 1 Corrections to Measurements of HRPD cells and cdma2000 9.0.0 9 2009-05 RP#45 RP-090879 231 CR reference correction 9.0.0 9 2009-05 RP#45 RP-090879 235 1 Corrections to Measurements of GSM cells in RRC_IDLE 9.0.0 9 2009-05 RP#45 RP-090879 247 Range of Idle Mode Es/lot side conditions 9.0.0 9		RP#45	RP-090836	304		(UTRA of lower priority	9.0.0	9.1.0
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2009-05 RP#45 RP-090879 249 Removal of [] from Tdetect, Tmeasure and Tevaluate 9.0.0 9								9.1.0
								9.1.0
2009-05 RP#45 RP-090879 245 1 Clarification to applicability of RSRP side conditions in Idle 9.0.0 9 mode	2009-05	KP#45	RP-090879	245	1		9.0.0	9.1.0

2009-05	RP#45	RP-090879	317		CR Idle mode IF measurement condition	9.0.0	9.1.0
2009-05	RP#45	RP-090879	318		CR Idle mode IF measurement period	9.0.0	9.1.0
2009-05	RP#45	RP-090879	217	2	Corrections to E-UTRAN RRC_IDLE state mobility requirements	9.0.0	9.1.0
2009-05	RP#45	RP-090814	265	1	Correction to Random Access	9.0.0	9.1.0
2009-05	RP#45	RP-090816	221		E-UTRAN TDD-TDD inter frequency cell search/measurement requirements when DRX is used	9.0.0	9.1.0
2009-05	RP#45	RP-090816	223		E-UTRAN inter RAT measurement requirements	9.0.0	9.1.0
2009-05	RP#45	RP-090816	229		Correction to Monitoring of Multiple Layers Using Gaps	9.0.0	9.1.0
2009-05	RP#45	RP-090816	219	1	E-UTRAN FDD-FDD inter frequency measurements when DRX is used	9.0.0	9.1.0
2009-05	RP#45	RP-090816	322		CR GSM measurement period	9.0.0	9.1.0
2009-05	RP#45	RP-090816	323		CR cdma2000 1x and HRPD number of carriers	9.0.0	9.1.0
2009-05	RP#45	RP-090816	213	1	Editorial correction on E-UTRAN inter frequency measurements	9.0.0	9.1.0
2009-05	RP#45	RP-090816	261	1	E-UTRAN TDD intra frequency measurements	9.0.0	9.1.0
2009-05	RP#45	RP-090816	319	1	Clarification of the number of monitoring cells for intra frequency measurements	9.0.0	9.1.0
2009-05	RP#45	RP-090815	237		Correction of timing advance adjustment accuracy test case	9.0.0	9.1.0
2009-05	RP#45	RP-090815	291		Correction to UE Transmit Timing Requirements	9.0.0	9.1.0
2009-12	RP-46	RP-091275	329		Defining requirements for UTRA TDD measurements for	9.1.0	9.2.0
					SON (Technically endorsed at RAN 4 52bis in R4-093512)		
2009-12	RP-46	RP-091272	332		Modification of test case of E-UTRA TDD intra frequency cell reselection (Technically endorsed at RAN 4 52bis in R4-093552)	9.1.0	9.2.0
2009-12	RP-46	RP-091272	333		Modification of test case of E-UTRA TDD inter frequency cell reselection (Technically endorsed at RAN 4 52bis in R4-093553)	9.1.0	9.2.0
2009-12	RP-46	RP-091286	334		Introduction of Extended LTE1500 requirements for TS36.133 (Technically endorsed at RAN 4 52bis in R4-093636)	9.1.0	9.2.0
2009-12	RP-46	RP-091272	336		Addition of E-UTRA TDD to UTRA FDD reselection test cases (Technically endorsed at RAN 4 52bis in R4-093686)	9.1.0	9.2.0
2009-12	RP-46	RP-091271	338		Correction of missing accuracy requirements for UTRAN FDD (Technically endorsed at RAN 4 52bis in R4-093689)	9.1.0	9.2.0
2009-12	RP-46	RP-091275	340		CR cdma2000 HRPD measurement period (Technically endorsed at RAN 4 52bis in R4-093720)	9.1.0	9.2.0
2009-12	RP-46	RP-091275	342		CR cdma2000 1x measurement period (Technically endorsed at RAN 4 52bis in R4-093721)	9.1.0	9.2.0
2009-12	RP-46	RP-091272	344		Correction for E-UTRAN FDD - UTRAN FDD Cell Search in DRX Test Cases (Technically endorsed at RAN 4 52bis in R4-093890)	9.1.0	9.2.0
2009-12	RP-46	RP-091272	346		Revise geometry factors for Intra freq Reselection Test Cases	9.1.0	9.2.0
2009-12	RP-46	RP-091271	348		Corrections on RRM parameters for Bands 12, 14, 17	9.1.0	9.2.0
2009-12	RP-46	RP-091271	351	1	Corrections to PDSCH RMC-s	9.1.0	9.2.0
2009-12	RP-46	RP-091271	353		Corrections of TS36.133	9.1.0	9.2.0
2009-12	RP-46	RP-091275	356	1	UTRA TDD P-CCPCH RSCP absolute accuracy measurement in E-UTRAN	9.1.0	9.2.0
2009-12	RP-46	RP-091275	358	1	E-UTRAN TDD - UTRAN TDD cell search for SON	9.1.0	9.2.0
2009-12	RP-46	RP-091275	361		Cell Search Requirements for Intra-LTE Handover to Unknown Target Cell	9.1.0	9.2.0
2009-12	RP-46	RP-091273	365		Combined E-UTRAN interfrequency and GSM cell search test cases (Scenario set 3.2)	9.1.0	9.2.0
2009-12	RP-46	RP-091271	367	1	Correction in UE UTRA TDD P-CCPCH RSCP measurement capability for R9	9.1.0	9.2.0
2009-12	RP-46	RP-091273	374		E-UTRAN GSM RSSI Measurement Accuracy Tests	9.1.0	9.2.0
2009-12	RP-46	RP-091273	375		E-UTRAN UTRAN FDD CPICH RSCP Measurement Accuracy Tests	9.1.0	9.2.0
2009-12	RP-46	RP-091273	376		E-UTRAN UTRAN FDD CPICH Ec/No Measurement Accuracy Tests	9.1.0	9.2.0
2009-12	RP-46	RP-091275	378		Cell Timing Change Requirements for Event Triggered Reporting	9.1.0	9.2.0
2009-12	RP-46	RP-091271	380		Correction to Power Headroom Requirements	9.1.0	9.2.0
2009-12	RP-46	RP-091271	382		Editorial corrections to 36.133	9.1.0	9.2.0
2009-12	RP-46	RP-091271	387		Editorial corrections to the time units for RRC Re- establishment test cases	9.1.0	9.2.0
	DD 40	RP-091272	389	1	Introduction of cell search test case in DRX to verify L3	9.1.0	9.2.0
2009-12	RP-46	THE OUTLIE			filtering		
2009-12	RP-46	RP-091271	391		Correction to ONCG Patterns	9.1.0	9.2.0
			391 329			9.1.0 9.1.0	9.2.0 9.2.0

					reselection (Technically endorsed at RAN 4 52bis in R4- 093552)		
2009-12	RP-46	RP-091272	333		Modification of test case of E-UTRA TDD inter frequency cell reselection (Technically endorsed at RAN 4 52bis in R4-093553)	9.1.0	9.2.0
2010-03	RP-47	RP-100254	410		Idle mode corrections	9.2.0	9.3.0
2010-03	RP-47	RP-100254	405	1	UE measurement capability requirements in Idle and Connected	9.2.0	9.3.0
2010-03	RP-47	RP-100254	423	'	Correction to UE Measurement Capability Requirements in Idle Mode	9.2.0	9.3.0
2010-03	RP-47	RP-100254	412		Removal of activation time from interRAT handover requirements	9.2.0	9.3.0
2010-03	RP-47	RP-100254	417	1	Correction to UE Transmit Timing Requirements	9.2.0	9.3.0
2010-03	RP-47	RP-100254	402		Correction of E-UTRAN TDD inter frequency measurements R9	9.2.0	9.3.0
2010-03	RP-47	RP-100254	414	1	Enhanced GSM Requirements for CSFB	9.2.0	9.3.0
2010-03	RP-47	RP-100254	415	1	Enhanced UTRA FDD Requirements for CSFB	9.2.0	9.3.0
2010-03	RP-47	RP-100255	399		Correction of RSRP value in E-UTRAN FDDFDD Inter frequency reselection test	9.2.0	9.3.0
2010-03	RP-47	RP-100255	397		Addition of missing Es/Noc parameters in RRM test cases	9.2.0	9.3.0
2010-03	RP-47	RP-100255	421		Correction to RRC Re-establishment Test Case	9.2.0	9.3.0
2010-03	RP-47	RP-100255	427	1	Correction of UE transmit timing test case	9.2.0	9.3.0
2010-03	RP-47	RP-100255	419	1	Correction to RLM Test Cases	9.2.0	9.3.0
2010-03	RP-47	RP-100262	407	<u> </u>	Editorial Corrections in TS36.133(Rel-9)	9.2.0	9.3.0
2010-03	RP-47	RP-100263	413		Introduction of LTE in 800 MHz for Europe requirements in	9.2.0	9.3.0
2010-03	RP-47	RP-100264	395		TS 36.133	9.2.0	9.3.0
				1	Corrections for Extended UMTS1500 in TS36.133(Rel-9)		
2010-03	RP-47	RP-100269	393		AOA and TA measurement report mappings	9.2.0	9.3.0
2010-03	RP-47	RP-100269	403	2	Mapping of UE RxTx time difference measurement	9.2.0	9.3.0
2010-03	RP-47	RP-100266	425	2	Home eNode B synchronization requirement	9.2.0	9.3.0
2010-03	RP-47	RP-100266	424	2	Minimum requirements on SI reading for HeNB inbound mobility	9.2.0	9.3.0
2010-06	RP-48	RP-100622	473		Clarification on radio link monitoring	9.3.0	9.4.0
2010-06	55.40	DD 400000			Corrections of clause numbering on the test case of E- UTRAN FDD-FDD inter-frequency cell search requirements	9.3.0	9.4.0
0040.00	RP-48	RP-100622	472	_	for L3 fitering	000	0.40
2010-06	RP-48	RP-100622	466	1	Correction to RRM Test Cases	9.3.0	9.4.0
2010-06	RP-48	RP-100622	464	4	Correction to RRM Requirements	9.3.0	9.4.0
2010-06 2010-06	RP-48 RP-48	RP-100622 RP-100622	462 457	1	Correction to Absolute RSRP/RSRQ Definitions UE Measurement Capability Requirements for CDMA2000	9.3.0	9.4.0
2010-06	RP-48	RP-100622	457	1	Correction of E-UTRAN Inter-frequency Cell Re-selection Requirements	9.3.0	9.4.0
2010-06	RP-48	RP-100622	455	1	Correction to idle mode requirements(Rel-9)	9.3.0	9.4.0
2010-06	RP-48	RP-100622	449	1	Editorial corrections to 36.133(Rel-9)	9.3.0	9.4.0
2010-06	RP-48	RP-100622	449	1	Correction to TDD intrafrequency accuracy test case	9.3.0	9.4.0
2010-06	RP-48	RP-100622	441	1	Correction of Io value in E-UTRAN FDD and TDD Inter frequency RSRP tests	9.3.0	9.4.0
2010-06	RP-48	RP-100627	444	2	Corrections to CSG SI reading core requirement	9.3.0	9.4.0
2010-06	RP-48	RP-100627	444	1	RSRQ idle mode requirements	9.3.0	9.4.0
2010-06	RP-48	RP-100630	470	1	Test cases for R9 cell reselection enhancements	9.3.0	9.4.0
2010-06	RP-48	RP-100630	460	1	Missing E-UTRA - UTRA FDD DRX Requirements	9.3.0	9.4.0
2010-06	RP-48	RP-100631	442	2	Corrections to enhanced cell identification core requirement	9.3.0	9.4.0
2010-06	RP-48	RP-100632	469	-	Applicability of mobility requirements with inter-frequency RSTD measurements	9.3.0	9.4.0
2010-06	RP-48	RP-100632	439		UE Rx-Tx Time Difference Measurement Requirements for E-CID	9.3.0	9.4.0
2010-06	RP-48	RP-100632	438	2	CR UE RX-TX time-difference measurement requirement	9.3.0	9.4.0
2010-06	RP-48	RP-100632	433	5	RSTD Measurement Requirements for OTDOA	9.3.0	9.4.0
2010-06	RP-48	RP-100632	432	5	RSTD Accuracy Requirements for OTDOA	9.3.0	9.4.0
2010-09	RP-49	RP-100914	477	1	Cell identity change time in RRM Test cases	9.4.0	9.5.0
2010-09	RP-49	RP-100919	537		A clarification text in the RSTD intra-frequency accuracy requirements	9.4.0	9.5.0
2010-09	RP-49	RP-100920	506		Correction of drx-RetransmissionTimer parameters	9.4.0	9.5.0
2010-09	RP-49	RP-100915	508		Correction of lo value in RSRP FDD and TDD Intra frequency test	9.4.0	9.5.0
2010-09	RP-49	RP-100920	521	1	Editorial corrections to 36.133 (R9)	9.4.0	9.5.0
2010-09	RP-49	RP-100920	523	<u> </u>	Alignment of REFSENS between 36.101 and 36.133(R9)	9.4.0	9.5.0
2010-09	RP-49	RP-100914	525	1	Correction of Time to Trigger unit for 36.133(R9)	9.4.0	9.5.0
2010-09	RP-49	RP-100920 RP-100915	505	1	Corrections to 36.133(R9)	9.4.0	9.5.0
	RP-49	RP-100913	528	1	E-UTRAN FDD Intra Frequency RSTD Measurement	9.4.0	9.5.0
2010-09	111 10				Accuracy test case		

2040.00	DD 40	DD 400040	L 500		Enhanced CCED Descriptions and with DDV	0.40	0.50
2010-09	RP-49	RP-100919	539		Enhanced CSFB Requirements with DRX	9.4.0	9.5.0
2010-09	RP-49	RP-100919	540	4	Correction to E-CID Requirements	9.4.0	9.5.0
2010-09	RP-49	RP-100920	544	1	Addition of UTRA and GSM enhanced cell identification test	9.4.0	9.5.0
2010-09	RP-49	RP-100920	547	1	cases E-UTRAN FDD UE Rx – Tx Time Difference Measurement	9.4.0	9.5.0
					Accuracy test case		
2010-09	RP-49	RP-100914	479	1	Scrambling code change time in RRM Test cases	9.4.0	9.5.0
2010-09	RP-49	RP-100914	549		Introduction of CSG cell reselection requirements	9.4.0	9.5.0
2010-09	RP-49	RP-100920	527		correction of redundant Hysteresis(Hys) for 36.133(R9)	9.4.0	9.5.0
2010-09	RP-49	RP-100920	488	2	Test case for TDD UE Rx-Tx time difference measurement	9.4.0	9.5.0
2010-09	RP-49	RP-100914	483		Clarification of Radio link monitoring test cases	9.4.0	9.5.0
2010-09	RP-49	RP-100915	485		Test case for E-UTRA TDD event triggered reporting when L3 filtering is used in R9	9.4.0	9.5.0
2010-09	RP-49	RP-100915	487		E-UTRA TDD - UTRA TDD cell reselection in fading propagation conditions: UTRA TDD is of lower priority in R9	9.4.0	9.5.0
2010-09	RP-49	RP-100924	492		Test case for E-UTRAN TDD in the existence of non-allowed CSG cell	9.4.0	9.5.0
2010-09	RP-49	RP-100915	494		PDCCH Aggregation level for RRM tests	9.4.0	9.5.0
2010-09	RP-49	RP-100915	503		Correction of ES/lot value in E-UTRAN RSRQ FDD intra frequency test	9.4.0	9.5.0
2010-09	RP-49	RP-100915	496		Corrections to RRM OCNG Patterns	9.4.0	9.5.0
2010-09	RP-49	RP-100919	498		RRC timer accuracy requirement	9.4.0	9.5.0
2010-09	RP-49	RP-100915	501		Correction of OCNG	9.4.0	9.5.0
2010-09	RP-49	RP-100914	477	1	Cell identity change time in RRM Test cases	9.4.0	9.5.0
2010-09	RP-49	RP-100919	537		A clarification text in the RSTD intra-frequency accuracy requirements	9.4.0	9.5.0
2010-09	RP-49	RP-100920	506		Correction of drx-RetransmissionTimer parameters	9.4.0	9.5.0
2010-09	RP-49	RP-100915	508		Correction of Io value in RSRP FDD and TDD Intra frequency test	9.4.0	9.5.0
2010-09	RP-49	RP-100920	521	1	Editorial corrections to 36.133 (R9)	9.4.0	9.5.0
2010-09	RP-49	RP-100914	523		Alignment of REFSENS between 36.101 and 36.133(R9)	9.4.0	9.5.0
2010-09	RP-49	RP-100920	525	1	Correction of Time to Trigger unit for 36.133(R9)	9.4.0	9.5.0
2010-09	RP-49	RP-100915	505	1	Corrections to 36.133(R9)	9.4.0	9.5.0
2010-09	RP-49	RP-100920	528	1	E-UTRAN FDD Intra Frequency RSTD Measurement Accuracy test case	9.4.0	9.5.0
2010-09	RP-49	RP-100919	538	1	Correction to Enhanced BSIC Verification Requirements	9.4.0	9.5.0
2010-09	RP-49	RP-100919	539		Enhanced CSFB Requirements with DRX	9.4.0	9.5.0
2010-09	RP-49	RP-100919	540		Correction to E-CID Requirements	9.4.0	9.5.0
2010-09	RP-49	RP-100920	544	1	Addition of UTRA and GSM enhanced cell identification test cases	9.4.0	9.5.0
2010-09	RP-49	RP-100920	547	1	E-UTRAN FDD UE Rx – Tx Time Difference Measurement Accuracy test case	9.4.0	9.5.0
2010-09	RP-49	RP-100914	479	1	Scrambling code change time in RRM Test cases	9.4.0	9.5.0
2010-09	RP-49	RP-100914	549		Introduction of CSG cell reselection requirements	9.4.0	9.5.0
2010-09	RP-49	RP-100920	527		correction of redundant Hysteresis(Hys) for 36.133(R9)	9.4.0	9.5.0
2010-09	RP-49	RP-100920	488	2	Test case for TDD UE Rx-Tx time difference measurement	9.4.0	9.5.0
2010-09	RP-49	RP-100914	483		Clarification of Radio link monitoring test cases	9.4.0	9.5.0
2010-09	RP-49	RP-100915	485		Test case for E-UTRA TDD event triggered reporting when L3 filtering is used in R9	9.4.0	9.5.0
2010-09	RP-49	RP-100915	487		E-UTRA TDD - UTRA TDD cell reselection in fading propagation conditions: UTRA TDD is of lower priority in R9	9.4.0	9.5.0
2010-09	RP-49	RP-100924	492		Test case for E-UTRAN TDD in the existence of non-allowed CSG cell	9.4.0	9.5.0
2010-09	RP-49	RP-100915	494		PDCCH Aggregation level for RRM tests	9.4.0	9.5.0
2010-09	RP-49	RP-100915	503		Correction of ES/lot value in E-UTRAN RSRQ FDD intra frequency test	9.4.0	9.5.0
2010-09	RP-49	RP-100915	496		Corrections to RRM OCNG Patterns	9.4.0	9.5.0
2010-09	RP-49	RP-100919	498		RRC timer accuracy requirement	9.4.0	9.5.0
2010-09	RP-49	RP-100915	501		Correction of OCNG	9.4.0	9.5.0
2010-09	RP-49	RP-100927	497		CR LTE_TDD_2600_US spectrum band definition additions to TS 36.133	9.5.0	10.0.0
2010-12	RP-50	RP-101331	635		Corrections to 36.133 performance requirements	10.0.0	10.1.0
2010-12	RP-50	RP-101331	638		Correction to intra frequency cell identification time for FDD and TDD	10.0.0	10.1.0
2010-12	RP-50	RP-101331	566	1	Corrections and Clarifications to TS36.133	10.0.0	10.1.0
2010-12	RP-50	RP-101331	592	2	Correction to Radio link monitoring test cases	10.0.0	10.1.0
2010-12						4000	10.1.0
2010-12	RP-50	RP-101332	563		PDCCH Aggregation Level for RRM Tests	10.0.0	
2010-12 2010-12	RP-50 RP-50	RP-101332	571		MIMO correlation scenario for RLM test cases	10.0.0	10.1.0
2010-12	RP-50						

2010-12 2010-12	RP-50 RP-50	RP-101332 RP-101335	585 643	1	Enabling HARQ for RRM Tests Completion of CSG cell reselection requirements	10.0.0	10.1.0
2010-12	RP-50 RP-50	RP-101335 RP-101343	568	1	Clarification of CSG cell reselection requirements Clarification of measurements requirements for HRPD and cdma2000 1x	10.0.0	10.1.0
2010-12	RP-50	RP-101343	589		Addition of Band 18, 19 and 21 into UE Rx - Tx time difference requirements	10.0.0	10.1.0
2010-12	RP-50	RP-101343	604		Correction to Enhanced GSM Cell Identification Requirement	10.0.0	10.1.0
2010-12	RP-50	RP-101343	632		Correction of reselection requirement for UTRAN FDD cells	10.0.0	10.1.0
2010-12	RP-50	RP-101343	640		Correction to Enhanced UTRA FDD Cell Identification Requirements	10.0.0	10.1.0
2010-12	RP-50	RP-101343	645		E-UTRAN TDD Intra Frequency RSTD Measurement Accuracy test case	10.0.0	10.1.0
2010-12	RP-50	RP-101343	621	1	Correction for Measurements of inter-RAT cells	10.0.0	10.1.0
2010-12	RP-50	RP-101343	598	2	E-UTRAN FDD intra-frequency RSTD measurement reporting delay test case	10.0.0	10.1.0
2010-12	RP-50	RP-101343	600	2	E-UTRAN TDD intra-frequency RSTD measurement reporting delay test case	10.0.0	10.1.0
2010-12	RP-50	RP-101356	644		Band 42 and 43 parameters for UMTS/LTE 3500 (TDD) for TS 36.133	10.0.0	10.1.0
2010-12	RP-50	RP-101361	552		Introduction of L-band in TS36.133	10.0.0	10.1.0
2010-12	RP-50	RP-101388	648		Removal of square brackets from scope of TS36.133	10.0.0	10.1.0
2011-04	RP-51	RP-110359	0658	-	Addition of UE RRM capabilities for CA	10.1.0	10.2.0
2011-04	RP-51	RP-110340	0663	-	Correction to E-UTRAN TDD in-sync test requirements	10.1.0	10.2.0
2011-04	RP-51	RP-110348	0665	1	RSTD requirements, RMC and OCNG patterns	10.1.0	10.2.0
2011-04	RP-51	RP-110350	0669	-	CR to 36.133: Aligning relavant RRM requirements for Band 41 with the reference sensitivity values in 36.101	10.1.0	10.2.0
2011-04	RP-51	RP-110339	0676	-	Modification on test case of E-UTRA TDD to UTRA TDD cell reselection(R10)	10.1.0	10.2.0
2011-04	RP-51	RP-110339	0681	1	Value of MS_TXPWR_MAX_CCH for EUTRA-GSM reselection test cases A.4.4.x	10.1.0	10.2.0
2011-04	RP-51	RP-110339	0687	1	Rearrangement of Time periods for EUTRA-UTRA reselection test case A.4.3.1.1	10.1.0	10.2.0
2011-04	RP-51	RP-110339	0690	1	Removal of "Force to Cell 2" during initialisation for EUTRA- UTRA reselection test case A.4.3.1.2	10.1.0	10.2.0
2011-04	RP-51	RP-110340	0693	1	SNR for RRM A.8.x test cases using ETU70	10.1.0	10.2.0
2011-04	RP-51	RP-110408	0697	1	Requirements for Minimaztion of Drive Tests (MDT) in LTE	10.1.0	1000
2011-04	RP-51	RP-110339	0703	-	Correction to test cases of E-UTRA to UTRA cell reselection when UE is in idle state	10.1.0	10.2.0
2011-04	RP-51	RP-110359	0706	2	Introduction of measurement requirements for carrier aggregation	10.1.0	10.2.0
2011-04	RP-51	RP-110347	0709	1	Addition of test cases for FDD intra-frequency SI reading using autonomous gaps with both non DRX and DRX for Rel- 10	10.1.0	10.2.0
2011-04	RP-51	RP-110347	0711	1	Addition of test cases for FDD inter-frequency SI reading using autonomous gaps with both non DRX and DRX for Rel-	10.1.0	10.2.0
2011-04	RP-51	RP-110359	0713	1	Introduction of core requirements of radio link monitoring in CA	10.1.0	10.2.0
2011-04	RP-51	RP-110339	0719	1	Modification on Test Requirements in E-UTRA - UTRA TDD SON Test Case (A.8.7.3) (R10)	10.1.0	10.2.0
2011-04	RP-51	RP-110348	0727	2	Requirements for reporting criteria with positioning measurements	10.1.0	10.2.0
2011-04	RP-51	RP-110340	0736	-	Correction of RLM evaluation period in DRX	10.1.0	10.2.0
2011-04	RP-51	RP-110340	0739	-	Correction of inter-frequency measurement accuracy test cases	10.1.0	10.2.0
2011-04	RP-51	RP-110339	0744	-	Modification on Test Requirements in E-UTRA GSM cell reselection Test Case (A.4.4) (R10)	10.1.0	10.2.0
2011-04	RP-51	RP-110348	0747	1	Corrections to RSTD measurement for Rel-9	10.1.0	10.2.0
2011-04	RP-51	RP-110348	0748	-	Correction on FDD Intra Frequency RSTD Measurement Accuracy test case	10.1.0	10.2.0
2011-04	RP-51	RP-110348	0751	1	RSTD test case corrections	10.1.0	10.2.0
2011-04	RP-51	RP-110344	0753	-	Correction of serving cell performance requirements for autonomous SI acquisition	10.1.0	10.2.0
2011-06	RP-52	RP-110753	0785	1	Simplification of frequency dependent requirements in 36.133 (Table B.2.2-1 contains erroneous values. These wrong values will be corrected in the RAN#53 meeting.)	10.2.0	10.3.0
2011-06	RP-52	RP-110793	754		E-UTRAN FDD-FDD inter-frequency RSTD measurement reporting delay test case with the reference cell on the serving carrier frequency	10.2.0	10.3.0
2011-06	RP-52	RP-110793	755		E-UTRAN TDD-TDD inter-frequency RSTD measurement reporting delay test case with the reference cell on the serving carrier frequency	10.2.0	10.3.0

2011-06	RP-52	RP-110807	757		Core requirements on RRC connection mobility control in CA	10.2.0	10.3.0
2011-06	RP-52	RP-110807	758		Timing core requirements in CA	10.2.0	10.3.0
2011-06	RP-52	RP-110807	759		Introduction of Handover Requirements for Carrier Aggregation	10.2.0	10.3.0
2011-06	RP-52	RP-110793	760		E-UTRAN FDD Inter Frequency RSTD Measurement Accuracy test case	10.2.0	10.3.0
2011-06	RP-52	RP-110793	761		E-UTRAN TDD Inter Frequency RSTD Measurement Accuracy test case	10.2.0	10.3.0
2011-06	RP-52	RP-110786	765		Rearrangement of Time periods for EUTRA-UTRA reselection test case A.4.3.4.1	10.2.0	10.3.0
2011-06	RP-52	RP-110786	768		Removal of "Force to Cell 2" during initialisation for EUTRA - UTRA reselection test cases	10.2.0	10.3.0
2011-06	RP-52	RP-110807	776		Introduction of UE interruption requirements in SCC measurements with de-activated SCell	10.2.0	10.3.0
2011-06	RP-52	RP-110794	797		Editorial Correction to Cell Re-selection Requirements	10.2.0	10.3.0
2011-06	RP-52	RP-110789	808		Correction to side conditions for TDD inter-frequency CGI identification for Rel-10	10.2.0	10.3.0
2011-06	RP-52	RP-110786	814		Correction to inter-RAT cell identificiation time in DRX for Rel-10	10.2.0	10.3.0
2011-06	RP-52	RP-110787	817		Correction to identification time of UTRA FDD cell for SON in DRX for Rel-10	10.2.0	10.3.0
2011-06	RP-52	RP-110787	822		Correction to requirements of E-UTRAN TDDUTRAN TDD measurements for SON when DRX is used for Rel-10	10.2.0	10.3.0
2011-06	RP-52	RP-110807	829		Corrrection to the side condition for measurements for E- UTRA carrier aggregation	10.2.0	10.3.0
2011-06	RP-52	RP-110803	850		CR Timestamp accuracy requirements for MDT	10.2.0	10.3.0
2011-06	RP-52	RP-110812	778	1	Add 2GHz S-Band (Band 23) in 36.133	10.2.0	10.3.0
2011-06	RP-52	RP-110796	787	1	Clarification on inter-frequency layers for RSTD	10.2.0	10.3.0
2011-06	RP-52	RP-110794	780	1	Correction to RSTD measurement for Rel-10	10.2.0	10.3.0
2011-06	RP-52	RP-110807	852	1	Pcmax,c mapping	10.2.0	10.3.0
2011-06	RP-52	RP-110787	771	1	Clarification of Radio link monitoring test requirements (The CR was not implemented as it is not based on the latest version of the specification)	10.2.0	10.3.0
2011-06	RP-52	RP-110807	793	1	E-CID Measurement Requirements under Pcell Switching	10.2.0	10.3.0
2011-06	RP-52	RP-110807	775	1	Removal of undefined intra-freq RSRQ relative accuracy requirements in CA	10.2.0	10.3.0
2011-06	RP-52	RP-110789	856		Correction on E-UTRAN FDD RSTD intra frequency case	10.2.0	10.3.0
2011-06	RP-52	RP-110796	800	1	Addition of E-UTRAN FDD/TDD cdma2000 1xRTT measurements requirement for SON for Rel-10	10.2.0	10.3.0
2011-06	RP-52	RP-110790	804	1	Addition of test cases for TDD intra-frequency SI reading using autonomous gaps with both non DRX and DRX for Rel-10	10.2.0	10.3.0
2011-06	RP-52	RP-110790	806	1	Addition of test cases for TDD inter-frequency SI reading using autonomous gaps with both non DRX and DRX for Rel-	10.2.0	10.3.0
2011-06	RP-52	RP-110787	828	1	Addition of missing EsNoc parameters in E-UTRAN TDD UTRAN TDD Measurements test cases for Rel-10	10.2.0	10.3.0
2011-06	RP-52	RP-110807	835	1	Clarification of UE Rx-Tx time difference measurement requirement for carrier aggregation	10.2.0	10.3.0
2011-06	RP-52	RP-110804	859		Expanded 1900 MHz addition to 36.133	10.2.0	10.3.0
2011-06	RP-52	RP-110811	860		Introduction of RLM requirement for eICIC	10.2.0	10.3.0
2011-06	RP-52	RP-110796	794	1	E-CID Measurement Requirements under Handover	10.2.0	10.3.0
2011-06	RP-52	RP-110811	762	1	CR on RLM requirements for eICIC	10.2.0	10.3.0
2011-06	RP-52	RP-110811	788	2	RSRP and RSRQ measurement requirements for elCIC	10.2.0	10.3.0
2011-06	RP-52	RP-110811	851	1	CR on RSRP and RSRQ measurement accuracy requirements for elCIC	10.2.0	10.3.0
2011-06	RP-52	RP-110807	802	2	Addition of OTDOA measurement requirement for E-UTRAN carrier aggregation	10.2.0	10.3.0
2011-09	RP-53	RP-111246	863		Thresholds and margins for reporting of neighbour cells in RRM test A.8.9.1	10.3.0	10.4.0
2011-09	RP-53	RP-111246	902	ļ	Thresholds and margins for RRM tests A.5.2.1 and A.5.2.2	10.3.0	10.4.0
2011-09	RP-53	RP-111246	905		Thresholds and margins for RRM tests A.5.2.4 and A.5.2.5	10.3.0	10.4.0
2011-09 2011-09	RP-53 RP-53	RP-111247 RP-111247	889 915		Removing [] in clause 8.1.2.2.2.2 for Rel-10 Adding condition of UTRA TDD measurement report delay	10.3.0	10.4.0
0011	DD 5-	DD :-	000		requirements applied	40.0-	10.1.
2011-09	RP-53 RP-53	RP-111247 RP-111251	930 926	1	Clarify time points and time duration for RLM tests A.7.3.x Adding enhanced UTRA TDD cell identification requirements for Rel-10	10.3.0	10.4.0
2011-09	RP-53	RP-111251	969		CR for E-UTRAN FDD GSM event triggered reporting in AWGN with enhanced BSIC identification in R10	10.3.0	10.4.0
2011-09	RP-53	RP-111252	894		Requirements for RRC Connection Release with Redirection	10.3.0	10.4.0
2011-09	RP-53	RP-111252	960		Missing RSRQ in Intra-frequency measurement requirements	10.3.0	10.4.0

		1	I		for TDD in R10		
2011-09	RP-53	RP-111255	946		Introduction of Band 22	10.3.0	10.4.0
2011-09	RP-53	RP-111255	979	1	Modifications of Band 42 and 43	10.3.0	10.4.0
2011-09	RP-53	RP-111263	879	1	Correction to RRC connection mobility control in CA	10.3.0	10.4.0
2011-09	RP-53	RP-111263	895	2	RSTD Measurement Requirements under Handover	10.3.0	10.4.0
2011-09	RP-53	RP-111263	896	2	RSTD Measurement Requirements under Pcell Switching	10.3.0	10.4.0
2011-09	RP-53	RP-111263	920	1	Editorial corrections for 36.133 (Rel-10)	10.3.0	10.4.0
2011-09	RP-53	RP-111263	924	1	Correction to RRC connection mobility control in CA	10.3.0	10.4.0
2011-09	RP-53	RP-111263	927		Modifications on TDD inter frequency measurements with autonomous gaps	10.3.0	10.4.0
2011-09	RP-53	RP-111263	945	1	Frequency band related requirements to 36.133	10.3.0	10.4.0
2011-09	RP-53	RP-111263	949	1	Correction of references	10.3.0	10.4.0
2011-09	RP-53	RP-111263	950		Alignment of the carrier aggregation terminology	10.3.0	10.4.0
2011-09	RP-53	RP-111263	951		Band simplification for core requirements	10.3.0	10.4.0
2011-09	RP-53	RP-111263	952		Clarification in inter-frequency RSTD accuracy tests	10.3.0	10.4.0
2011-09	RP-53	RP-111263	953	1	Editorial corrections for RRM requirements	10.3.0	10.4.0
2011-09	RP-53	RP-111263	961		Missing RSRQ in E-UTRA carrier aggregation measurement requirements	10.3.0	10.4.0
2011-09	RP-53	RP-111265	874	1	Clarification of TDD uplink-downlink subframe configurations applicability for RSTD measurement in CA	10.3.0	10.4.0
2011-09	RP-53	RP-111265	875	3	CR on UE interruption requirements in SCC measurements with de-activated SCell when common DRX is used	10.3.0	10.4.0
2011-09	RP-53	RP-111265	883	1	Alignment of terminology for SCell measurement cycle	10.3.0	10.4.0
2011-09	RP-53	RP-111265	921	1	Introduction of Pcmax,c reporting requirements for carrier	10.3.0	10.4.0
	<u> </u>		<u>L</u>		aggregation		
2011-09	RP-53	RP-111266	849	3	RSTD Accuracy Requirements for Carrier Aggregation	10.3.0	10.4.0
2011-09	RP-53	RP-111266	898	1	Introduction of power headroom reporting requirement for	10.3.0	10.4.0
					carrier aggregation		
2011-09	RP-53	RP-111308	891	1	RSRP and RSRQ measurement requirements for elCIC	10.3.0	10.4.0
2011-12	RP-54	RP-111681	982		Corrections of inter-frequency measurement accuracy RSRP and RSRQ test cases	10.4.0	10.5.0
2011-12	RP-54	RP-111682	984		Removing [] in CSFB requirement for Rel-10	10.4.0	10.5.0
2011-12	RP-54	RP-111693	985		Reference channel for RLM testing with elCIC	10.4.0	10.5.0
2011-12	RP-54	RP-111683	987		Clarification on RSTD test cases	10.4.0	10.5.0
2011-12	RP-54	RP-111690	988		RSRP Measurement performance Io corrections	10.4.0	10.5.0
2011-12	RP-54	RP-111686	989		RLM measurement requirements for eICIC	10.4.0	10.5.0
2011-12	RP-54	RP-111693	990		PDCCH/PCFICH transmission parameters for RLM	10.4.0	10.5.0
2011-12	RP-54	RP-111683	992		Clarification on PRS bandwidth	10.4.0	10.5.0
2011-12	RP-54	RP-111735	993		Missing RSRQ in intra-frequency measurement requirements for elClC	10.4.0	10.5.0
2011-12	RP-54	RP-111686	994	1	Test case for TDD RSRQ Accuracy for Carrier Aggregation	10.4.0	10.5.0
2011-12	RP-54	RP-111686	995		Cell identification requirements without DRX	10.4.0	10.5.0
2011-12	RP-54	RP-111693	997	1	Test case for cell identification with eICIC in E-UTRAN FDD	10.4.0	10.5.0
2011-12	RP-54	RP-111693	998	1	Test case for cell identification with eICIC in E-UTRAN TDD	10.4.0	10.5.0
2011-12	RP-54	RP-111691	999	1	Carrier aggregation RSRP measurement test case for TDD	10.4.0	10.5.0
2011-12	RP-54 RP-54	RP-111690 RP-111690	1001		Test case for enhanced UTRA TDD cell identification for R10 Test case for RRC connection release redirection to UTRA	10.4.0	10.5.0 10.5.0
2011-12					TDD for R10	10.4.0	
2011-12	RP-54	RP-111735	1005		Clarification of the Successful Percentage for Measurement Performance Requirements	10.4.0	10.5.0
2011-12	RP-54	RP-111691	1007	2	FDD Absolute and Relative RSRQ Accuracy test in CA	10.4.0	10.5.0
2011-12	RP-54	RP-111691	1011	1	FDD absolute and relative RSRP accuracies test in CA	10.4.0	10.5.0
2011-12	RP-54	RP-111693	1014	1	E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync under time domain measurement resource restriction	10.4.0	10.5.0
2011-12	RP-54	RP-111735	1016		E-UTRAN FDD - UTRAN TDD enhanced cell identification test under AWGN propagation conditions in R10	10.4.0	10.5.0
2011-12	RP-54	RP-111735	1018	1	E-UTRAN FDD RRC connection release with redirection to UTRAN TDD in R10	10.4.0	10.5.0
2011-12	RP-54	RP-111735	1021	1	CR for Inter-RAT SI reading	10.4.0	10.5.0
2011-12	RP-54	RP-111687	1021		Addition of E-UTRAN FDD - TDD Inter frequency cell	10.4.0	10.5.0
2011-12	RP-54	RP-111687	1023		reselection test case Addtion of E-UTRAN TDD - FDD Inter frequency cell	10.4.0	10.5.0
2011-12	RP-54	RP-111687	1024		reselection test case Addtion of E-UTRAN FDD - TDD Inter frequency handover	10.4.0	10.5.0
2011-12	RP-54	RP-111687	1025		test case Addtion of E-UTRAN TDD - FDD Inter frequency handover	10.4.0	10.5.0
2011-12	RP-54	RP-111687	1026		test case Addtion of E-UTRAN TDD-FDD Inter-frequency event triggered reporting under fading propagation conditions in	10.4.0	10.5.0
2011-12	RP-54	RP-111687	1027	1	asynchronous cells test case Addtion of E-UTRAN FDD-TDD Inter-frequency event	10.4.0	10.5.0
	3.			-	triggered reporting under fading propagation conditions in asynchronous cells test case	130	. 3.0.0

2011-12	RP-54	RP-111687	1028		Addtion of E-UTRAN FDD - TDD inter frequency	10.4.0	10.5.0
0011 10	DD 54	DD 444004	4004		measurement accuracy test case	40.40	40.50
2011-12	RP-54	RP-111681	1031		Correction for the identification time in DRX for UTRA TDD in R10	10.4.0	10.5.0
2011-12	RP-54	RP-111735	1032		Correction the side condition for SCH in R10	10.4.0	10.5.0
2011-12	RP-54	RP-111735	1033	1	Correction to event triggered reporting for TS 36.133 in R10	10.4.0	10.5.0
2011-12	RP-54	RP-111681	1039	1	Correction of E-UTRAN TDD-TDD inter frequency handover test case in R10	10.4.0	10.5.0
2011-12	RP-54	RP-111735	1041		Clarification of Expected RSTD and Expected RSTD uncertainty in RSTD test cases in R10	10.4.0	10.5.0
2011-12	RP-54	RP-111680	1043		Thresholds and margins for RRM tests A.8.11.3 and A.8.11.4	10.4.0	10.5.0
2011-12	RP-54	RP-111683	1046		Thresholds and margins for RRM tests A.8.11.5 and A.8.11.6	10.4.0	10.5.0
2011-12	RP-54	RP-111693	1047	2	RLM Out of Sync Detection Test for eICIC	10.4.0	10.5.0
2011-12	RP-54	RP-111683	1049		RRC Connection Release with Redirection from E-UTRAN FDD to GERAN	10.4.0	10.5.0
2011-12	RP-54	RP-111693	1051		Colliding CRS in non-MBSFN ABS	10.4.0	10.5.0
2011-12	RP-54	RP-111683	1052		RRC Connection Release with Redirection from E-UTRAN TDD to GERAN	10.4.0	10.5.0
2011-12	RP-54	RP-111693	1053	1	RLM In Sync Detection Test for FDD eICIC	10.4.0	10.5.0
2011-12	RP-54	RP-111693	1054	1	RLM In Sync Detection Test for FDD eICIC	10.4.0	10.5.0
2011-12	RP-54	RP-111691	1055	1	FDD Event triggered reporting on deactivated Scell in non- DRX	10.4.0	10.5.0
2011-12	RP-54	RP-111691	1056	1	TDD Event triggered reporting on deactivated Scell in non- DRX	10.4.0	10.5.0
2011-12	RP-54	RP-111683	1058		Adding Band XX	10.4.0	10.5.0
2011-12	RP-54	RP-111690	1061	1	Optional faster higher priority reselection	10.4.0	10.5.0
2011-12	RP-54	RP-111735	1064	1	Addition of a test case at lower RSRP level for the serving cell measurement accuracy	10.4.0	10.5.0
2011-12	RP-54	RP-111683	1066		Test cases for RRC connection release with redirection to UTRAN FDD	10.4.0	10.5.0
2011-12	RP-54	RP-111735	1072		CA definition alignment in test cases	10.4.0	10.5.0
2011-12	RP-54	RP-111683	1074		Applicable PRS BW for RSTD accuracy requirements	10.4.0	10.5.0
2012-03	RP-55	RP-120304	1077	1	RSTD signalling modifications	10.5.0	10.6.0
2012-03	RP-55	RP-120294	1079	1	Test case for E-UTRA TDD RRC connection release redirection to UTRA TDD without SI provided for R10	10.5.0	10.6.0
2012-03	RP-55	RP-120294	1081	1	Test case for E-UTRA FDD RRC connection release redirection to UTRA TDD without SI provided for R10	10.5.0	10.6.0
2012-03	RP-55	RP-120291	1084		Thresholds and margins for E-UTRAN to C2K RRM reselection test cases (Rel-10)	10.5.0	10.6.0
2012-03	RP-55	RP-120294	1087		Addition of E-UTRAN TDD-HRPD Cell Reselection: HRPD is of Lower Priority test case R10	10.5.0	10.6.0
2012-03	RP-55	RP-120293	1089		Addition of E-UTRAN TDD-cdma2000 1X Cell Reselection: cdma2000 1X is of Lower Priority test case R10	10.5.0	10.6.0
2012-03	RP-55	RP-120293	1091		Addition of E-UTRAN TDD-HRPD Handover test case R10	10.5.0	10.6.0
2012-03	RP-55	RP-120294	1093		Addition of E-UTRAN TDD-cdma2000 1X Handover test case R10	10.5.0	10.6.0 10.6.0
2012-03	RP-55	RP-120294	1099		Addition of E-UTRAN FDD-TDD inter frequency RSRQ measurement accuracy test case R10	10.5.0	10.6.0
2012-03	RP-55	RP-120300	1112	1	RLM test cases with SNRs for OOS and INS for E-UTRAN TDD in elClC	10.5.0	10.6.0
2012-03	RP-55	RP-120304	1115		Io difference band-independent in Inter-frequency RSRP TDD TC A.9.1.4	10.5.0	10.6.0
2012-03	RP-55	RP-120292	1118	1	Thresholds and margins in RRM test case A.8.11.4	10.5.0	10.6.0
2012-03	RP-55	RP-120292	1121		TDD PRACH Test cases value of PRACH Configuration Index and first preamble power	10.5.0	10.6.0
2012-03	RP-55	RP-120292	1124	1	PDSCH and OCNG pattern in PRACH Test cases A.6.2.1 and A.6.2.3	10.5.0	10.6.0
2012-03	RP-55	RP-120300	1134	1	Clarification of colliding CRS in MBSFN ABS	10.5.0	10.6.0
2012-03	RP-55	RP-120304	1135		Editorial corrections on the test cases of RRC connection release with redirection to UTRAN FDD	10.5.0	10.6.0
2012-03	RP-55	RP-120304	1139	1	Corrections on test case of Event triggered reporting on deactivated Scell in non-DRX CR not implemented as it is based on the wrong	10.5.0	10.6.0
					version of the spec		
2012-03	RP-55	RP-120304	1140		Core requirements for E-UTRAN TDD inter-RAT UTRAN FDD SI acquisition using autonomous gaps	10.5.0	10.6.0
2012-03	RP-55	RP-120304	1143	1	Editorial corrections	10.5.0	10.6.0
2012-03	RP-55	RP-120300	1145	1	Side condition clarification for eICIC with MBSFN	10.5.0	10.6.0
2012-03	RP-55	RP-120300	1146		Clarification on reported cells with elCIC	10.5.0	10.6.0
2012-03	RP-55	RP-120294	1148		Correction of RSTD accuracy test cases for TDD	10.5.0	10.6.0
2012-03	RP-55	RP-120300	1151	2	RLM requirements with autonomous gaps	10.5.0	10.6.0
2012-03	RP-55	RP-120300	1152	1	SNR levels in out-of-sync RLM test cases for elCIC	10.5.0	10.6.0
		RP-120303			CR for 36.133: B41 REFSENS and MOP changes to		

			<u> </u>	ļ	accommodate single filter architecture		
2012-03	RP-55	RP-120300	1157		eICIC measurement accuracy	10.5.0	10.6.0
2012-03	RP-55	RP-120307	1154	1	Introduction of Band 26/XXVI to TS 36.133	10.6.0	11.0.0
2012-06	RP-56	RP-120782	1162		Resolve Band 41 omission between R4-120125 and R4- 121106	11.0.0	11.1.0
2012-06	RP-56	RP-120770	1165	1	Corrections to FDD-TDD Inter-freq RSRP measurement accuracy test case parameters	11.0.0	11.1.0
2012-06	RP-56	RP-120771	1168		OCNG and PDSCH for FDD-TDD event triggered reporting test cases	11.0.0	11.1.0
2012-06	RP-56	RP-120771	1171		RRC Connection Release with Redirection from E-UTRAN FDD to GERAN without System Information	11.0.0	11.1.0
2012-06	RP-56	RP-120771	1174		RRC Connection Release with Redirection from E-UTRAN TDD to GERAN without System Information	11.0.0	11.1.0
2012-06	RP-56	RP-120784	1176		OCNG Patterns for MBSFN ABS	11.0.0	11.1.0
2012-06	RP-56	RP-120769	1183		Addition of E-UTRAN TDD-FDD Inter-frequency event	11.0.0	11.1.0
20.2 00	55	1.1. 1.207.00			triggered reporting when DRX is used under fading propagation conditions in asynchronous cells test case R11		
2012-06	RP-56	RP-120769	1186		Addition of E-UTRAN TDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test case R11	11.0.0	11.1.0
2012-06	RP-56	RP-120769	1189		Addition of E-UTRAN FDD-TDD Inter-frequency event triggered reporting when DRX is used under fading propagation conditions in asynchronous cells R11	11.0.0	11.1.0
2012-06	RP-56	RP-120769	1192		Addition of E-UTRAN FDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test case R11	11.0.0	11.1.0
2012-06	RP-56	RP-120777	1195	1	Addition of E-UTRAN TDD-HRPD event triggered reporting under fading propagation conditions test case R11	11.0.0	11.1.0
2012-06	RP-56	RP-120769	1198		Addition of E-UTRAN TDD-CDMA2000 1X event triggered reporting under fading propagation conditions test case R11	11.0.0	11.1.0
2012-06	RP-56	RP-120770	1201		E-UTRA TDD RRC connection release redirection to UTRA FDD test without SI provided R11	11.0.0	11.1.0
2012-06	RP-56	RP-120784	1205	1	FDD RSRQ under Time Domain Measurement Resource Restriction with Non-MBSFN ABS R11	11.0.0	11.1.0
2012-06	RP-56	RP-120784	1207	1	TDD RSRQ under Time Domain Measurement Resource Restriction with Non-MBSFN ABS R11	11.0.0	11.1.0
2012-06	RP-56	RP-120780	1213		CR to TS36.133 Corrections on RRC signalling in RLM test cases for eICIC	11.0.0	11.1.0
2012-06	RP-56	RP-120773	1223		Test case for event-triggered reporting on deactivated SCell with PCell interruption	11.0.0	11.1.0
2012-06	RP-56	RP-120770	1227	1	Finalization of Rel.9 cell reselection enhancement related test cases	11.0.0	11.1.0
2012-06	RP-56	RP-120770	1231		E-UTRAN FDD to UTRAN FDD RRC connection release with redirection test case when SI is not provided	11.0.0	11.1.0
2012-06	RP-56	RP-120781	1233		No interruptions on PCell at SCell activation/ deactivation when measCycleSCell is smaller than 640 ms	11.0.0	11.1.0
2012-06	RP-56	RP-120780	1235		Editorial corrections	11.0.0	11.1.0
2012-06	RP-56	RP-120782	1237	1	Reporting criteria requirements for carrier aggregation	11.0.0	11.1.0
2012-06	RP-56	RP-120784	1239		Cell identification requirements with DRX	11.0.0	11.1.0
2012-06	RP-56	RP-120784	1241	1	Phase II elCIC FDD: absolute and relative RSRP accuracies in non-MBSFN ABS	11.0.0	11.1.0
2012-06	RP-56	RP-120784	1243	1	Phase II eICIC TDD: absolute and relative RSRP accuracies in non-MBSFN ABS	11.0.0	11.1.0
2012-06	RP-56	RP-120784	1249		RLM requirements with autonomous gaps for DRX	11.0.0	11.1.0
2012-06	RP-56	RP-120779	1251		CR for 36.133: Aligning RSRQ measurement requirements in TS 36.133 with TS 36.101 regarding the modification of B41 REFSENS	11.0.0	11.1.0
2012-06	RP-56	RP-120777	1260		Bands 22, 23, 42 and 43 side conditions for inter-frequency measurements with autonomous gaps	11.0.0	11.1.0
2012-06	RP-56	RP-120772	1261		Clarification on UE Rx-Tx with eICIC	11.0.0	11.1.0
2012-06	RP-56	RP-120767	1271		sr-ConfigIndex in TDD DRX test cases	11.0.0	11.1.0
2012-06	RP-56	RP-120782	1273	1	Remove [] from elCIC RSRP, RSRQ Es/lot side conditions	11.0.0	11.1.0
2012-06	RP-56	RP-120764	1277	1	RRM: Clarifications to the OCNG patterns	11.0.0	11.1.0
2012-06	RP-56	RP-120784	1279	2	Intra-Frequency FDD RSRQ Accuracy under Time Domain Measurement Resource Restriction with MBSFN ABS	11.0.0	11.1.0
2012-06	RP-56	RP-120784	1286	1	elCIC FDD out-of-sync RLM test case in MBSFN ABS	11.0.0	11.1.0
2012-06	RP-56	RP-120784	1288	1	elCIC TDD out-of-sync RLM test case in MBSFN ABS	11.0.0	11.1.0
2012-06	RP-56	RP-120781	1289	1	On UE behavior in the uplink subframe after measurement GAP	11.0.0	11.1.0
2012-06	RP-56	RP-120773	1293	1	Clarification on the number of monitoring layers for CA UEs	11.0.0	11.1.0
2012-06	RP-56	RP-120784	1299	2	CR on TDD RSRQ test case under Time Domain Measurement Resource Restriction with MBSFN ABS Rel11	11.0.0	11.1.0
2012-06	RP-56	RP-120784	1303	1	In-Sync RLM test case in MBSFN ABS for E-UTRAN FDD R11	11.0.0	11.1.0
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2012-06	RP-56	RP-120784	1306	1	In-Sync RLM test case in MBSFN ABS for E-UTRAN TDD R11	11.0.0	11.1.0
2012-06	RP-56	RP-120781	1310		Inter-frequency and Inter-RAT Requirements for	11.0.0	11.1.0
2042.00	DD 50	DD 400700	4040	4	Measurements without Measurement Gaps	44.0.0	44.4.0
2012-06	RP-56	RP-120788	1318	1	The introduction of Multi-TA timing requirements R11	11.0.0	11.1.0
2012-06	RP-56	RP-120777	1320	1	Addition of E-UTRAN FDD RSTD measurement accuracy test case in carrier aggregation R11	11.0.0	11.1.0
2012-06	RP-56	RP-120777	1322		Addition of E-UTRAN TDD RSTD measurement accuracy test case in carrier aggregation R11	11.0.0	11.1.0
2012-06	RP-56	RP-120779	1328		Correction to RLM requirements in elCIC with Autonomous gaps R11	11.0.0	11.1.0
2012-06	RP-56	RP-120769	1331	1	Correction to E-UTRAN FDD/TDD - UTRAN FDD /TDD enhanced cell identification test case R11	11.0.0	11.1.0
2012-06	RP-56	RP-120770	1336		Correction to E-UTRAN TDD redirection to UTRAN FDD test configuration R11	11.0.0	11.1.0
2012-06	RP-56	RP-120780	1337	1	FDD CA RSTD Measurement Reporting Delay Test Case (Rel-11)	11.0.0	11.1.0
2012-06	RP-56	RP-120782	1338	1	TDD CA RSTD Measurement Reporting Delay Test Case (Rel-11)	11.0.0	11.1.0
2012-06	RP-56	RP-120779	1342		Correction to RSTD measurement reporting delay requirement in CA R11	11.0.0	11.1.0
2012-06	RP-56	RP-120795	1345	1	Add Band 25 lo values R11	11.0.0	11.1.0
2012-06	RP-56	RP-120777	1347	1	Clarification for cell identification condition in inter-RAT SI reading requirement R11	11.0.0	11.1.0
2012-06	RP-56	RP-120793	1349	_	Introduction of Band 28	11.0.0	11.1.0
2012-06	RP-56	RP-120794	1350	1	Introduction of Band 44	11.0.0	11.1.0
2012-06	RP-56	RP-120780	1355		Editorial corrections	11.0.0	11.1.0
2012-06	RP-56	RP-120766	1361	2	Correction of a timer period in inter-frequency measurement tests	11.0.0	11.1.0
2012-06	RP-56	RP-120764	1363	1	UL Transmit Timing Requirements	11.0.0	11.1.0
2012-06	RP-56	RP-120784	1364	2	Phase Ilbis eICIC FDD absolute and relative RSRP accuracy with MBSFN ABS	11.0.0	11.1.0
2012-06	RP-56	RP-120784	1366	2	Phase Ilbis eICIC TDD absolute and relative RSRP accuracy with MBSFN ABS	11.0.0	11.1.0
2012-06	RP-56	RP-120784	1368		OCNG correction in Phase I elCIC test cases	11.0.0	11.1.0
2012-06	RP-56	RP-120792	1379		Introduction of e850_LB (Band 27) to TS 36.133	11.0.0	11.1.0
2012-09	RP-57	RP-121301	1385		Identification of Cell 3 in RRM Test cases A.4.2.7 and A.4.2.8	11.1.0	11.2.0
2012-09	RP-57	RP-121301	1390		Making FDD-TDD Inter-freq RSRQ measurement accuracy	11.1.0	11.2.0
2012-09	RP-57	RP-121304	1392		test case band-agnostic Thresholds and margins in RRM test cases A.8.16.1 and	11.1.0	11.2.0
2012-09	RP-57	RP-121295	1398	1	A.8.16.2 Modification of Handover Delay Requirement and Test Cases	11.1.0	11.2.0
2012-09	RP-57	RP-121302	1400	1	from E-UTRAN to cdma2000 1x (Rel-11)	11.1.0	11.2.0
					Correction to RSRP/RSRQ measurement accuracy tests in MBSFN R11		
2012-09	RP-57	RP-121304	1403		Activation/ deactivation core requirement for carrier aggregation R11	11.1.0	11.2.0
2012-09	RP-57	RP-121313	1405		Minor corrections for E-UTRAN â€' GSM measurements without Measurement Gaps and Rx-Tx measurements when PCell is changed	11.1.0	11.2.0
2012-09	RP-57	RP-121304	1407	3	RRM requirements for CA REFSENSE (Rel-11)	11.1.0	11.2.0
2012-09	RP-57	RP-121304	1409	-	Square Bracket Removal for RSTD measurement	11.1.0	11.2.0
2012-09	RP-57	RP-121304	1411		requirement in Pcell changing and Handover R11 Correction to the E-UTRAN secondary component carrier	11.1.0	11.2.0
2012-09	RP-57	RP-121304	1411		measurements when common DRX is used R11 Requirements for Inter-frequency Measurements without	11.1.0	11.2.0
2012-09	RP-57	RP-121304	1415		Gaps when DRX is used R11 Clarification on TDD UL-DL subframe configurations in inter-	11.1.0	
					frequency RSTD measurement without gaps R11 Correction for E-UTRA TDD RRC connection release		11.2.0
2012-09	RP-57	RP-121301	1418		redirection to UTRA TDD test case R11	11.1.0	11.2.0
2012-09	RP-57	RP-121340	1419		Addition of E-UTRAN FDD - UTRAN FDD identification of a new CGI of UTRAN cell using autonomous gaps	11.1.0	11.2.0
2012-09	RP-57	RP-121340	1420		Addition of E-UTRAN TDD - UTRAN FDD identification of a new CGI of UTRAN cell using autonomous gaps	11.1.0	11.2.0
2012-09	RP-57	RP-121301	1423		Correction to E-UTRAN TDD-FDD Inter-frequency event triggered reporting test case R11	11.1.0	11.2.0
2012-09	RP-57	RP-121302	1432		Alignment for ABS configurations in RRM Tests R11	11.1.0	11.2.0
2012-09	RP-57	RP-121294	1433	1	Correction to RSRQ accuracy test cases R11	11.1.0	11.2.0
2012-09	RP-57	RP-121297	1438		Radio conditions for PBCH reading in E-UTRA	11.1.0	11.2.0
2012-09	RP-57	RP-121305	1444		Introduction of inter-frequency/ RAT measurements in CA	11.1.0	11.2.0
2012-09	RP-57	RP-121302	1449		ABS signal transmission configuration for RRM tests	11.1.0	11.2.0
2012-09	RP-57	RP-121340	1450		Table format update for adding new bands	11.1.0	11.2.0

2012-12 RP-58 RP-121809 1458 Random Access requirements for SCell 11.20 11.20 11.20 12.20 12.20 12.20 RP-58 RP-121861 1459 Correction on CA TDD RSTD measurement accuracy test 11.20 11.20 12.20 12.20 RP-58 RP-121861 1461 Correction to high priority cell measurement accuracy test 11.20 11.20 12.20 RP-58 RP-121861 1467 Correction of Test Requirements for CA RSRP, RSRQ Test 11.20 11.20 12.20 RP-58 RP-121861 1467 Correction of Test Requirement in RRM Test cases A.4.27 11.20 11.20 11.20 12.20 12.20 RP-58 RP-121861 1468 Clean up for CA Clean up for CA 11.20 11.20 12.20 12.20 RP-58 RP-121861 1448 Clean up for CA 11.20 12.20 12.20 RP-58 RP-121861 1449 Clean discast of CPICH RSCP side conditions 11.20 11.20 12.20 12.20 RP-58 RP-121867 1449 Clean discast of CPICH RSCP side conditions 11.20 11.20 12.20 12.20 RP-58 RP-121867 1449 Correction of RSTD Measurement Reporting Delay for 11.20 11.20 12.20 RP-58 RP-121861 1566 Seand-dependent RSTD requirements for CA 11.20 11.20 12.20 RP-58 RP-121864 1566 Seand-dependent RSTD requirements for CA 11.20 11.20 12.20 RP-58 RP-121864 1566 Seand-dependent RSTD requirements for CA 11.20 11.20 12.20 RP-58 RP-121864 1566 Correction of CONOP Patterns for UE Rx-Tx Time Difference 12.20 12.20 RP-58 RP-121864 1560 Correction of CONOP Patterns for UE Rx-Tx Time Difference 12.20 12.20 RP-58 RP-121864 1560 Correction of CONOP Patterns for UE Rx-Tx Time Difference 12.20 12.20 12.20 RP-58 RP-121864 1560 Correction of CONOP Patterns for UE Rx-Tx Time Difference 12.20 12.20 RP-58 RP-121864 1560 Correction of CONOP Patterns for UE Rx-Tx Time Difference 12.20 12.20 RP-58 RP-121864 1560 Correction of CONOP Patterns for UE Rx-Tx Time Difference 12.20 12.20 RP-58 RP-121864 1560 Correction of CONOP Patterns for UE Rx-Tx Time Diff
2012-12 RP-58 RP-121861 1469 Correction on CA TIDD RSTD measurement accuracy test 11.20 11.
2012-12
2012-12 RP-58 RP-121861 461 Correction to high priority cell measurement of UTRA TDD 11.20 11.20 12.012-12 RP-58 RP-121861 467 Clarification of Test Requirements for CA RSRP, RSRQ Test 11.20 11.20 12.012-12 RP-58 RP-121860 470 Remove from 10% requirement in RRM Test cases A.4.2.7 11.20 11.20 12.012-12 RP-58 RP-121861 486 Clean up for CA Clarification of CPICH RSCP side conditions 11.20 11.20 12.012-12 RP-58 RP-121861 486 Clean up for CA Clarification of CPICH RSCP side conditions 11.20 11.20 12.012-12 RP-58 RP-121867 489 Editorial corrections 11.20 11.20 11.20 12.012-12 RP-58 RP-121867 499 Send correction in RRM requirements 11.20 11.20 11.20 12.012-12 RP-58 RP-121861 550 Send correction in RRM requirements 11.20 11.20 12.012-12 RP-58 RP-121861 5507 Correction of CPICH RSCP side conditions 11.20 11.20 12.012-12 RP-58 RP-121861 5507 Correction of RSTD Measurement Reporting Delay for 11.20 11.20 12.012-12 RP-58 RP-121861 5507 Correction of CPICH RSCP side conditions 11.20 12.012-12 RP-58 RP-121861 5507 Correction of CPICH RSCP side conditions 11.20 11.20 12.012-12 RP-58 RP-121861 5507 Correction of CPICM Parties for UP ER - TX Time Difference 11.20 11.20 12.012-12 RP-58 RP-121861 552 Time offset correction in CA test cases R11 12.01 12.012-12 12.012-12 RP-58 RP-121861 552 Time offset correction in CA test cases R11 12.01 12.012-12 RP-58 RP-121861 5537 Correction on RSTD measurement requirement under HO 12.012-12 RP-58 RP-121861 5537 Correction on RSTD measurement requirement under HO 12.012-12 RP-58 RP-121861 5551 Correction on RSTD measurements 12.012-12 RP-58 RP-121861 5555 RP-121864 1559 Correction on RSTD measurements 12.012-12 RP-58 RP-121861 1555 RP-121861 1552 Correction on RSTD measurements 12.012-12 RP-58 RP-121861 1555 RP-121861 1555 RP-121861 1552 RP-121861 1552 RP-121861 1553 R
2012-12 RP-58 RP-121861 461 Correction to high priority cell measurement of UTRA TDD 11.20 11.20 11.20 12.21 RP-58 RP-121861 467 Clainfication of Test Requirements for CA RSRP, RSRQ Test 11.20 11.20 12.21 RP-58 RP-121860 470 Remove from 10% requirement in RRM Test cases A.4.2.7 11.20 11.20 12.21 RP-58 RP-121861 486 Clean up for CA Clainfication of CPICH RSCP side conditions 11.20 11.20 12.2012-12 RP-58 RP-121867 489 Editorial corrections 11.20 11.20 12.2012-12 RP-58 RP-121867 489 Editorial corrections in RRM requirements 11.20 11.20 12.2012-12 RP-58 RP-121867 489 Editorial correction in RRM requirements 11.20 11.20 11.20 12.2012-12 RP-58 RP-121861 556 Band correction in RRM requirements 11.20 11.20 11.20 12.2012-12 RP-58 RP-121861 556 Correction of CPICH RSCP side conditions 11.20 11.20 11.20 11.20 12.2012-12 RP-58 RP-121861 556 Correction of RSTD Measurement Reporting Delay for 11.20 11.20 11.20 12.2012-12 RP-58 RP-121861 556 Correction of CPICH RSCP side conditions 11.20 11.20 11.20 12.2012-12 RP-58 RP-121861 556 Correction of CPICH RSCP side conditions 11.20 11.20 11.20 12.2012-12 RP-58 RP-121861 556 Correction of CPICH RSCP side conditions 11.20 11.20 11.20 11.20 12.2012-12 RP-58 RP-121861 552 Time offset correction in CAI set classes R11 11.20 11.20 11.20 12.2012-12 RP-58 RP-121861 553 Cell identification requirements in FelCiC 12.20 11.20 12.2012-12 RP-58 RP-121861 553 Correction on RSTD measurement requirement under HO 12.20 12.2012-12 RP-58 RP-121861 553 Correction on RSTD measurement requirement ment and requirements in 36:133 Rel-11 11.20 11.20 11.20 12.2012-12 RP-58 RP-121861 555 Correction on RSTD measurements 13.30 11.20 11.20 11.20 12.2012-12 RP-58 RP-121861 555 Correction on RSTD measurements in 36:133 Rel-11 11.20 11.2012-12 RP-58 RP-121861 555 Correction on Correctio
RP15
2012-12 RP-58 RP-121861 1467 . Clarification of Test Requirements for CA RSRP, RSRQ Test 11.20 11.
Cases Case
2012-12 RP-58 RP-121861 1486 1 Clean up for CA
2012-12 RP-58 RP-121861 1486 1 Clean up for CA
2012-12 RP-58 RP-121861 1486 1 Clean up for CA
2012-12 RP-58 RP-121867 1488 - Editorial corrections 11.20 11.
2012-12 RP-58 RP-121867 1499 - Editorial corrections EMM requirements 11.2.0 11.
2012-12 RP-58 RP-121867 1499 - Editorial corrections EMM requirements 11.2.0 11.
2012-12
2012-12 RP-58 RP-121861 1499 Correction to RSTD Messurement Reporting Delay for Carrier Aggregation Test Cases 11.2.0 11.2.0 11.2.0 12.012-12 RP-58 RP-121872 1507 1 CR on RLM Requirements for CA 11.2.0 11.2.0 11.2.012-12 RP-58 RP-121872 1507 1 CR on RLM Requirements for FeICIC 11.2.0 11.2.012-12 RP-58 RP-121872 1517 1 Cell Identification requirements in FeICIC 11.2.0 11.2.012-12 RP-58 RP-121872 1517 1 Cell Identification requirements in FeICIC 11.2.0 11.2.012-12 RP-58 RP-121854 1529 1 Call Identification requirements in FeICIC 11.2.0 11.2.012-12 RP-58 RP-121854 1529 1 Call Identification on RSTD measurement requirement under HO 11.2.0 11.2.012-12 RP-58 RP-121840 1537 Register of the RSTD measurement requirement under HO 11.2.0 11.2.012-12 RP-58 RP-121910 1540 2 Introduction the IDC requirements in 36.133 Rel-11 11.2.0 11.2.012-12 RP-58 RP-121910 1542 Updating RRM requirements in 36.133 Rel-11 11.2.0 11.2.012-12 RP-58 RP-121867 1545 Editorial corrections RRM 11.2.0 11.2.012-12 RP-58 RP-121867 1545 Editorial corrections RRM 11.2.0 11.2.012-12 RP-58 RP-121862 1553 Correcting inconsistency between inter-RAT UTRA 11.2.0 11.2.012-12 RP-58 RP-121861 1555 Reference requirements for CA capable UE 11.2.0 11.2.012-12 RP-58 RP-121861 1558 Intra-frequency RSTD accuracy requirements account for 11.2.0 11.2.012-12 RP-58 RP-121861 1558 Intra-frequency RSTD accuracy requirements in CA mode test 11.2.0 11.2.012-12 RP-58 RP-121863 1562 Intra-frequency RSTD accuracy requirements in CA mode test 11.2.0 11.2.012-12 RP-58 RP-121863 1562 Intra-frequency RSTD accuracy requirements in CA mode test 11.3.0 11.2.012-12 RP-58 RP-121863 1562 Intra-frequency RSTD accuracy requirements in CA mode test 11.3.0 11.2.012-12 RP-58 RP-121863 1562 Intra-frequency RSTD accuracy requirements in CA m
Carrier Aggregation Test Cases
2012-12 RP-58 RP-121872 507 CR on RLM Requirements for CA 11.2.0 11.2.0121-12 RP-58 RP-121874 1516 Correction of OCNG Patterns for UE Rx - Tx Time Difference 11.2.0 11.2.0121-12 RP-58 RP-121874 1516 Correction of OCNG Patterns for UE Rx - Tx Time Difference 11.2.0 11.2.0121-12 RP-58 RP-121875 1522 Time offset correction in CA test cases R11 11.2.0 11.2.0121-12 RP-58 RP-121874 1529 Clarification requirements in FeICIC 11.2.0 11.2.0121-12 RP-58 RP-121874 1529 Clarification on RSTD measurement requirement under HO 11.2.0 11.2.0121-12 RP-58 RP-12180 1530 Introduction the IDC requirements in 36.133 Rel-11 11.2.0 11.2.0121-12 RP-58 RP-121810 1530 Introduction the IDC requirements in 36.133 Rel-11 11.2.0 11.2.0121-12 RP-58 RP-12180 1542 Updating RRM requirements in 36.133 Rel-11 11.2.0 11.2.0121-12 RP-58 RP-12180 1545 Editional corrections RRM 11.2.0 11.2.0121-12 RP-58 RP-12180 1545 Editional corrections RRM 11.2.0 11.2.0121-12 RP-58 RP-12180 1545 Correction on RSTM 11.2.0 11.2.0121-12 RP-58 RP-12185 1549 Conditions in CSG reselection requirements 11.2.0 11.2.0121-12 RP-58 RP-12185 1555 Correcting inconsistency between inter-RAT UTRA 11.2.0 11.2.0121-12 RP-58 RP-12186 1555 Referse requirements for CA capable UE 11.2.0 11.2.0121-12 RP-58 RP-12186 1555 Referse requirements for CA capable UE 11.2.0 11.2.0121-12 RP-58 RP-12186 1561 1562 Intra-frequency RSTD accuracy requirements account for serving cell bandwidth 11.2.0 11.2.0121-12 RP-58 RP-12186 1561 Intra-frequency RSTD accuracy requirements in CA mode test 11.3.0 11.2.0121-12 RP-58 RP-12186 1561 Intra-frequency RSTD accuracy requirements in CA mode test 11.3.0 11.2.0121-12 RP-58 RP-13026 1561 Intra-frequency relative Requirements in CA mode test 11.3.0 11.2.013-13 Intra-frequency relative Requirements in CA mode test 11.3.1
2012-12
2012-12 RP-58 RP-121854 516 Correction of OCNG Patterns for UE Rx - Tx Time Difference 11.2.0 11.
Test Cases
Test Cases
2012-12 RP-58 RP-121851 1522 Time offset correction in CA test cases R11 11.2.0 11.
2012-12
2012-12 RP-58 RP-121854 1529 1 Clarification on RSTD measurement requirement under HO 11.2.0 11.
2012-12
2012-12
2012-12
2012-12
Rel-11
2012-12
2012-12
2012-12
2012-12
measurements and requirements
2012-12
2012-12
2012-12
Serving Cell bandwidth
2012-12
2012-12
2012-12
2012-12 RP-58 RP-121901 1563 - Introduction of Band 29 11.2.0 11.2012-12 Editorial Correction 11.3.0 11.2013-03 RP-59 RP-130268 1477 1 Correction to Inter-frequency Measurements in CA mode test 11.3.1 11.2013-03 RP-59 RP-130267 1480 1 Requirements for RSRP and RSRQ for E-CID Positioning 11.3.1 11.2013-03 RP-59 RP-130263 1566 Secondary Component carrier levels for CA RSRP Test cases A.9.1.6 and A.9.1.7 2013-03 RP-59 RP-130263 1568 Remove intra-frequency relative Requirement for CA RSRQ 11.3.1 11.2013-03 RP-59 RP-130263 1572 Cell timing for CA RSRP and RSRQ Test cases 11.3.1 11.2013-03 RP-59 RP-130263 1576 Clarification of retuning interruption in single carrier operation 11.3.1 11.2013-03 RP-59 RP-130263 1576 Clarification of retuning interruption in single carrier operation 11.3.1 11.2013-03 RP-59 RP-130268 1582 Correction to CSG proximity requirement 11.3.1 11.2013-03 RP-59 RP-130268 1584 Correction to CSG proximity requirement 11.3.1 11.2013-03 RP-59 RP-130263 1598 Clarification of Cell Identification core requirements in FeICIC 11.3.1 11.2013-03 RP-59 RP-130263 1598 Clarification of Cell Identification core requirements in FeICIC 11.3.1 11.2013-03 RP-59 RP-130263 1598 Clarification of Cell Identification core requirements in FeICIC 11.3.1 11.2013-03 RP-59 RP-130263 1598 Clarification of Cell Identification core requirements in FeICIC 11.3.1 11.2013-03 RP-59 RP-130263 1598 Clarification of Cell Identification core requirements in FeICIC 11.3.1 11.2013-03 RP-59 RP-130263 1598 Clarification of Cell Identification in CA RSTD measurements 11.3.1 11.2013-03 RP-59 RP-130263 1692 Timing offset correction in CA RSTD measurement 11.3.1 11.2013-03 RP-59 RP-130265 1662 Editorial corrections for IDC 11.3.1 11.2013-03 RP-59 RP-130265 1662 Editorial corrections for IDC 11.3.1 11.2013-03
Editorial Correction
Editorial Correction
2013-03 RP-59 RP-130268 1477 1 Correction to Inter-frequency Measurements in CA mode test case R11 11.3.1 11.
Case R11 Case R11 Case R11 Requirements for RSRP and RSRQ for E-CID Positioning 11.3.1 11.2 2013-03 RP-59 RP-130263 1566 Secondary Component carrier levels for CA RSRP Test 11.3.1 11.2 2013-03 RP-59 RP-130263 1568 Remove intra-frequency relative Requirement for CA RSRQ 11.3.1 11.2 2013-03 RP-59 RP-130263 1572 Cell timing for CA RSRP and RSRQ Test cases 11.3.1 11.2 2013-03 RP-59 RP-130277 1573 1 Editorial correction for introduction of Band 29 11.3.1 11.2 2013-03 RP-59 RP-130263 1576 Clarification of retuning interruption in single carrier operation 11.3.1 11.2 2013-03 RP-59 RP-130263 1576 Clarification of retuning interruption in single carrier operation 11.3.1 11.2 2013-03 RP-59 RP-130268 1582 Correction to CSG proximity requirement 11.3.1 11.2 2013-03 RP-59 RP-130268 1584 E-UTRAN FDD Proximity Indication RRM Requirements (Rel-11) 2013-03 RP-59 RP-130263 1598 UE interruption requirements in SCC RSTD measurements 11.3.1 11.2 2013-03 RP-59 RP-130263 1598 UE interruption requirements in SCC RSTD measurements 11.3.1 11.2 2013-03 RP-59 RP-130263 1598 UE interruption requirements in SCC RSTD measurements 11.3.1 11.2 2013-03 RP-59 RP-130262 1616 Editorial corrections for IDC 11.3.1 11.3 2013-03 RP-59 RP-130263 1616 Editorial corrections for IDC 11.3.1 11.3 2013-03 RP-59 RP-130263 1622 Editorial corrections RRM 11.3.1 11.3 11.3 2013-03 RP-59 RP-130268 1622 Editorial corrections RRM 11.3.1 11.3 11.3 2013-03 RP-59 RP-130268 1622 Editorial corrections RRM 11.3.1 11.3 11.3 11.3 2013-03 RP-59 RP-130268 1622 Editorial corrections RRM 11.3.1 11.3 11.3 2013-03 RP-59 RP-130268 1622 Editorial corrections RRM 11.3.1 11.3 11.3 2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.3 2013-03 RP-59 RP-1
2013-03 RP-59 RP-130263 1566 Secondary Component carrier levels for CA RSRP Test 11.3.1 11.2 11.3
2013-03 RP-59 RP-130263 1566 Secondary Component carrier levels for CA RSRP Test cases A.9.1.6 and A.9.1.7
Cases A.9.1.6 and A.9.1.7 Cases A.9.1.6 and A.9.1.7 Remove intra-frequency relative Requirement for CA RSRQ 11.3.1 11.5 Test Cases 11.3.1 11.5 Test Cases 11.3.1 11.5 1
RP-59
Test Cases
2013-03 RP-59 RP-130263 1572 Cell timing for CA RSRP and RSRQ Test cases 11.3.1 11.2
2013-03 RP-59 RP-130263 1576 Clarification of retuning interruption in single carrier operation 11.3.1 11.2013-03 RP-59 RP-130260 1579 RRM: RMC and OCNG pattern for FDD CGI test with autonomous gaps (Rel-11) 2013-03 RP-59 RP-130268 1582 Correction to CSG proximity requirement 11.3.1 11.2013-03 RP-59 RP-130268 1584 E-UTRAN FDD Proximity Indication RRM Requirements (Rel-11) 11.3.1 11.2013-03 RP-59 RP-130268 1584 E-UTRAN FDD Proximity Indication RRM Requirements (Rel-11) 11.3.1 11.2013-03 RP-59 RP-130275 1589 1 Clarification of Cell Identification core requirement in FelCIC 11.3.1 11.2013-03 RP-59 RP-130283 1591 1 RSRP/RSRQ measurement accuracy requirements in FelCIC 11.3.1 11.2013-03 RP-59 RP-130263 1598 UE interruption requirements in SCC RSTD measurements with de-activated Scell R11 2013-03 RP-59 RP-130287 1602 Timing offset correction in CA RSTD test cases 11.3.1 11.2013-03 RP-59 RP-130280 1616 Editorial corrections for IDC 11.3.1 11.2013-03 RP-59 RP-130262 1618 Editorial corrections for elCIC 11.3.1 11.2013-03 RP-59 RP-130258 1622 Editorial corrections RRM 11.3.1 11.2013-03 RP-59 RP-130259 1627 A clarification of PRS configuration for RSTD measurement 11.3.1 11.2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.2013-03 RP-59 RP-130268 RP-59 RP-13026
2013-03 RP-59 RP-130263 1576 Clarification of retuning interruption in single carrier operation 11.3.1 11.2013-03 RP-59 RP-130260 1579 RRM: RMC and OCNG pattern for FDD CGI test with autonomous gaps (Rel-11) 2013-03 RP-59 RP-130268 1582 Correction to CSG proximity requirement 11.3.1 11.2013-03 RP-59 RP-130268 1584 E-UTRAN FDD Proximity Indication RRM Requirements (Rel-11) 11.3.1 11.2013-03 RP-59 RP-130268 1584 E-UTRAN FDD Proximity Indication RRM Requirements (Rel-11) 11.3.1 11.2013-03 RP-59 RP-130275 1589 1 Clarification of Cell Identification core requirement in FelCIC 11.3.1 11.2013-03 RP-59 RP-130283 1591 1 RSRP/RSRQ measurement accuracy requirements in FelCIC 11.3.1 11.2013-03 RP-59 RP-130263 1598 UE interruption requirements in SCC RSTD measurements with de-activated Scell R11 2013-03 RP-59 RP-130287 1602 Timing offset correction in CA RSTD test cases 11.3.1 11.2013-03 RP-59 RP-130280 1616 Editorial corrections for IDC 11.3.1 11.2013-03 RP-59 RP-130262 1618 Editorial corrections for elCIC 11.3.1 11.2013-03 RP-59 RP-130258 1622 Editorial corrections RRM 11.3.1 11.2013-03 RP-59 RP-130259 1627 A clarification of PRS configuration for RSTD measurement 11.3.1 11.2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.2013-03 RP-59 RP-130268 RP-59 RP-13026
2013-03 RP-59 RP-130263 1576 Clarification of retuning interruption in single carrier operation 11.3.1 11.2
RP-59
autonomous gaps (Rel-11) 2013-03
2013-03 RP-59 RP-130268 1582 Correction to CSG proximity requirement 11.3.1 11.2
2013-03 RP-59 RP-130268 1584 E-UTRAN FDD Proximity Indication RRM Requirements (Rel-11.3.1 11.4 11.5
2013-03 RP-59 RP-130268 1584 E-UTRAN FDD Proximity Indication RRM Requirements (Rel-11.3.1 11.4 11.5
11 2013-03 RP-59 RP-130283 1591 1 RSRP/RSRQ measurement accuracy requirements in FelClC 11.3.1 11.2 2013-03 RP-59 RP-130263 1598 UE interruption requirements in SCC RSTD measurements 11.3.1 11.2 2013-03 RP-59 RP-130287 1602 Timing offset correction in CA RSTD test cases 11.3.1 11.2 2013-03 RP-59 RP-130280 1616 Editorial corrections for IDC 11.3.1 11.2 2013-03 RP-59 RP-130262 1618 Editorial corrections for elClC 11.3.1 11.2 2013-03 RP-59 RP-130258 1622 Editorial corrections RRM 11.3.1 11.3 11.3 2013-03 RP-59 RP-130259 1627 A clarification on measurement gap pattern in RSTD 11.3.1 11.3 11.3 2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.3 11.
2013-03 RP-59 RP-130275 1589 1 Clarification of Cell Identification core requirement in FelCIC 11.3.1 11.2
2013-03 RP-59 RP-130283 1591 1 RSRP/RSRQ measurement accuracy requirements in FelClC 11.3.1 11.2
2013-03 RP-59 RP-130263 1598 UE interruption requirements in SCC RSTD measurements 11.3.1 11.4
with de-activated Scell R11 2013-03 RP-59 RP-130287 1602 Timing offset correction in CA RSTD test cases 11.3.1 11.2 2013-03 RP-59 RP-130280 1616 Editorial corrections for IDC 11.3.1 11.2 2013-03 RP-59 RP-130262 1618 Editorial corrections for eICIC 11.3.1 11.2 2013-03 RP-59 RP-130258 1622 Editorial corrections RRM 11.3.1 11.3.1 11.3.1 2013-03 RP-59 RP-130259 1627 A clarification on measurement gap pattern in RSTD 11.3.1 11.3.1 11.3.1 2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.3.1 11.3.1 11.3.1
2013-03 RP-59 RP-130287 1602 Timing offset correction in CA RSTD test cases 11.3.1 11.2 2013-03 RP-59 RP-130280 1616 Editorial corrections for IDC 11.3.1 11.2 2013-03 RP-59 RP-130262 1618 Editorial corrections for eICIC 11.3.1 11.2 2013-03 RP-59 RP-130258 1622 Editorial corrections RRM 11.3.1 11.3.1 11.3.1 2013-03 RP-59 RP-130259 1627 A clarification on measurement gap pattern in RSTD 11.3.1 11.3.1 11.3.1 2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.3.1 11.3.1
2013-03 RP-59 RP-130280 1616 Editorial corrections for IDC 11.3.1 11.2 2013-03 RP-59 RP-130262 1618 Editorial corrections for eICIC 11.3.1 11.2 2013-03 RP-59 RP-130258 1622 Editorial corrections RRM 11.3.1 11.3.1 2013-03 RP-59 RP-130259 1627 A clarification on measurement gap pattern in RSTD 11.3.1 11.3.1 2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.3.1
2013-03 RP-59 RP-130262 1618 Editorial corrections for eICIC 11.3.1 11.2 2013-03 RP-59 RP-130258 1622 Editorial corrections RRM 11.3.1 11.3.1 11.2 2013-03 RP-59 RP-130259 1627 A clarification on measurement gap pattern in RSTD 11.3.1 11.3.1 11.2 2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.3.1 11.3.1
2013-03 RP-59 RP-130262 1618 Editorial corrections for eICIC 11.3.1 11.2 2013-03 RP-59 RP-130258 1622 Editorial corrections RRM 11.3.1 11.3.1 11.2 2013-03 RP-59 RP-130259 1627 A clarification on measurement gap pattern in RSTD 11.3.1 11.3.1 11.2 2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.3.1 11.3.1
2013-03 RP-59 RP-130258 1622 Editorial corrections RRM 11.3.1 11.4 2013-03 RP-59 RP-130259 1627 A clarification on measurement gap pattern in RSTD 11.3.1 11.4 2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.4
2013-03 RP-59 RP-130259 1627 A clarification on measurement gap pattern in RSTD 11.3.1 11.4 2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.3.1 11.4
requirements
2013-03 RP-59 RP-130268 1642 1 Modification of PRS configuration for RSTD measurement 11.3.1 11.4
reporting delay test acces/Bel 44\
reporting delay test cases(Rel-11)
2013-03 RP-59 RP-130261 1644 E-UTRAN FDD Proximity Indication Test Case (Rel-11) 11.3.1 11.4
2013-06 RP-60 RP-130763 1648 Correction to test parameters for combined E-UTRA - E- 11.4.0 11.4
UTRA and GSM cell search - Rel 11
2013-06 RP-60 RP-130763 1657 Clarification on inter-frequency RSTD measurement accuracy 11.4.0 11.3

			1	1	requirement R11		
2013-06	RP-60	RP-130765	1659	1	RRM test configurations for 20MHz R11	11.4.0	11.5.0
2013-06	RP-60	RP-130763	1668	1	Corrections on RSTD measurement test cases (Rel-11)	11.4.0	11.5.0
2013-06	RP-60	RP-130763	1673		Remove [] from GCI identification Test cases A.8.4.4 and A.8.4.5	11.4.0	11.5.0
2013-06	RP-60	RP-130761	1677		Cell 1 levels for RSRP Test cases A.9.1.3 and A.9.1.4	11.4.0	11.5.0
2013-06	RP-60	RP-130765	1679	1	RSRP, RSRQ RRM elCIC Test case cleanup	11.4.0	11.5.0
2013-06	RP-60	RP-130761	1683		Update on the GSM carrier RSSI measurement period when DRX is used	11.4.0	11.5.0
2013-06	RP-60	RP-130763	1692		sr-ConfigIndex in TDD-FDD Inter-frequency event triggered DRX Test case A.8.14.2	11.4.0	11.5.0
2013-06	RP-60	RP-130767	1694		Testing of CA tests with multiple BW combinations	11.4.0	11.5.0
2013-06	RP-60	RP-130767	1696		Reference measurement channels for 20 MHz Tests	11.4.0	11.5.0
2013-06	RP-60	RP-130765	1702		Editorial corrections RRM	11.4.0	11.5.0
2013-06 2013-06	RP-60 RP-60	RP-130761 RP-130770	1706 1708	1	Section numbering correction Editorial corrections for FelCIC	11.4.0	11.5.0 11.5.0
2013-06	RP-60	RP-130770	1700	1	Removing an elCIC note on measurements	11.4.0	11.5.0
2013-06	RP-60	RP-130770	1713		Clean up for CA	11.4.0	11.5.0
2013-06	RP-60	RP-130763	1716		Editorial corrections in RSTD requirements	11.4.0	11.5.0
2013-06	RP-60	RP-130766	1719		SCell Activation Delay Requirements in CA	11.4.0	11.5.0
2013-06	RP-60	RP-130765	1721		Clarification on supported bandwidth combinations in RSTD requirements with CA	11.4.0	11.5.0
2013-06	RP-60	RP-130770	1723	1	Impact of REFSENS requirements on the core specification	11.4.0	11.5.0
2013-06	RP-60	RP-130770	1724		Correction of the total number of reporting criteria	11.4.0	11.5.0
2013-06	RP-60	RP-130769	1728	1	Condition clarification in MDT requirements	11.4.0	11.5.0
2013-06	RP-60	RP-130769	1732		Band 26 test cases corrections	11.4.0	11.5.0
2013-06	RP-60	RP-130770	1739		CR on Interruptions for Intra-band Non-contiguous Carrier Aggregation	11.4.0	11.5.0
2013-06	RP-60	RP-130763	1744		Time Alignment Timer in Test Case A.8.2.4	11.4.0	11.5.0
2013-06	RP-60	RP-130763	1745		RRM: Adding required measurement gap	11.4.0	11.5.0
2013-06	RP-60	RP-130761	1749		TDD PRACH configuration index for Test Cases A.8.7.2, A.8.15.2	11.4.0	11.5.0
2013-06	RP-60	RP-130763	1752		GSM cell list size for Test Cases A.6.3.10, A.6.3.11	11.4.0	11.5.0
2013-06 2013-06	RP-60 RP-60	RP-130763 RP-130763	1755 1758		Neighbour list for Test cases A.8.5.4, A.8.7.4, A.8.9.2 Additional corrections on intra-frequency RSTD test	11.4.0 11.4.0	11.5.0 11.5.0
					parameters (Rel-11) Additional corrections on inter-frequency RSTD test		
2013-06	RP-60	RP-130763	1760		parameters (Rel-11)	11.4.0	11.5.0
2013-06	RP-60	RP-130767	1762		Phase I CA 20 MHz Tests: Event triggered reporting on deactivating Scells in non-DRX	11.4.0	11.5.0
2013-06	RP-60	RP-130763	1767		Corrections of E-UTRAN FDD CSG Proximity Indication Test Case (Rel-11)	11.4.0	11.5.0
2013-06	RP-60	RP-130770	1770	1	In sync detection with CRS assistance information with non-MBSFN ABS in FDD	11.4.0	11.5.0
2013-06	RP-60	RP-130770	1771	1	In sync detection with CRS assistance information with non- MBSFN ABS in TDD	11.4.0	11.5.0
2013-06	RP-60	RP-130770	1772	1	E-UTRAN FDD RLM Out-of-sync Test of FelCIC	11.4.0	11.5.0
2013-06 2013-06	RP-60 RP-60	RP-130770 RP-130767	1773 1776	1	E-UTRAN TDD RLM Out-of-sync Test of FeICIC E-UTRAN FDD absolute and relative RSRP accuracies for	11.4.0	11.5.0
					20MHz in CA R11		11.5.0
2013-06	RP-60	RP-130767	1778		E-UTRAN TDD absolute and relative RSRP accuracies for 20MHz in CA R11	11.4.0	11.5.0
2013-06	RP-60	RP-130765	1780		Modification of OCNG patterns of RRM test configuration for 20MHz R11	11.4.0	11.5.0
2013-06 2013-06	RP-60 RP-60	RP-130761 RP-130767	1782 1784		Clarification of Pcell in 36.133 R11 FDD Absolute and relative RSRQ accuracies for CA with	11.4.0 11.4.0	11.5.0 11.5.0
2013-06	RP-60	RP-130767	1786		20MHz BW (Rel-11) TDD Absolute and relative RSRQ accuracies for CA with	11.4.0	11.5.0
2013-06	RP-60	RP-130761	1790		20MHz BW (Rel-11) Correction on fading propagation condition for CA inter-RAT	11.4.0	11.5.0
2013-06	RP-60	RP-130770	1791		test cases R11 Clean up for band 44	11.4.0	11.5.0
2013-06	RP-60	RP-130765	1793	1	E-UTRAN TDD UE Rx-Tx time difference test case in eICIC	11.4.0	11.5.0
2013-06	RP-60	RP-130770	1799	1	Test case for UE Transmit Timing Accuracy for SCell	11.4.0	11.5.0
2013-06	RP-60	RP-130767	1801		CR on measurements without gaps	11.4.0	11.5.0
2013-06	RP-60	RP-130770	1804	1	Editorial corrections RRM	11.4.0	11.5.0
2013-06	RP-60	RP-130765	1806	1	Clarification for UE Rx-Tx with elCIC	11.4.0	11.5.0
2013-06	RP-60	RP-130770	1807	2	Capturing RF requirements in the core specification	11.4.0	11.5.0
2013-06	RP-60	RP-130765	1808	1	Test case for UE Rx-Tx accuracy with eICIC in FDD	11.4.0	11.5.0
2013-06 2013-06	RP-60 RP-60	RP-130770 RP-130765	1812 1814	1	RSRP and RSRQ relative accuracy requirements for FelCIC Adding clarification for begin and end of measurement GAP for Rel-11	11.4.0 11.4.0	11.5.0 11.5.0
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2013-06	RP-60	RP-130770	1822	1	Clarification on antenna ports in the measured and aggressor	11.4.0	11.5.0
					cells with FelCIC		
2013-06	RP-60	RP-130770	1825	1	UE Rx-Tx accuracy requirements with FeICIC	11.4.0	11.5.0
2013-06	RP-60	RP-130770	1826		UE Rx-Tx measurement requirements with FeICIC	11.4.0	11.5.0
2013-06	RP-60	RP-130770	1827	2	Test case for cell identification with FelCIC in FDD	11.4.0	11.5.0
2013-06 2013-06	RP-60 RP-60	RP-130770 RP-130770	1828 1829	2	Test case for cell identification with FeICIC in TDD Corrections on Wideband RSRQ inter-frequency accuracy	11.4.0 11.4.0	11.5.0 11.5.0
					requirements		
2013-06	RP-60	RP-130791	1769	1	Introduction of Band 30	11.5.0	12.0.0
09-2013	RP-61	RP-131303	1830	1	UTRAN FDD CPICH Ec/No measurement accuracy test for 5MHz bandwidth	12.0.0	12.1.0
09-2013	RP-61	RP-131291	1832		Correction on the test cases for UE Transmit Timing Accuracy for SCell (Rel-12)	12.0.0	12.1.0
09-2013	RP-61	RP-131282	1836		Corrections on RSTD CA test parameters (Rel-12)	12.0.0	12.1.0
09-2013	RP-61	RP-131282	1839		FDD: RSTD measurement reporting test cases for CA with	12.0.0	12.1.0
					20MHz BW (Rel-12)		
09-2013	RP-61	RP-131282	1842		TDD: RSTD measurement reporting test cases for CA with 20MHz BW (Rel-12)	12.0.0	12.1.0
09-2013	RP-61	RP-131285	1844		Timing and RSRP value corrections in Test cases A.9.2.6 and A.9.2.9	12.0.0	12.1.0
09-2013	RP-61	RP-131285	1846		Corrections to Bands for 20MHz CA Test cases	12.0.0	12.1.0
09-2013	RP-61	RP-131279	1854		Cell time offset in TDD Inter-RAT test cases	12.0.0	12.1.0
09-2013	RP-61	RP-131303	1855		EUTRA FDD-UTRA FDD cell reselection: UTRA FDD is of	12.0.0	12.1.0
09-2013	RP-61	RP-131282	1860		lower priority Rel-12 CRs on synchronization requirements for E-UTRA to	12.0.0	12.1.0
09-2013	RP-61	RP-131290	1866	1	CDMA 2000 handover Correct the SNR values for RLM tests with non-MBSFN ABS	12.0.0	12.1.0
	RP-61				in FelCIC R12 E-UTRAN FDD RSRP Measurement Accuracy Test in		
09-2013		RP-131290	1869	1	FelCIC R12	12.0.0	12.1.0
09-2013	RP-61	RP-131290	1871	1	E-UTRAN TDD RSRP Measurement Accuracy Test in FelCIC R12	12.0.0	12.1.0
09-2013	RP-61	RP-131284	1873		E-UTRAN FDD UE Rx-Tx Time difference test in FelCIC R12	12.0.0	12.1.0
09-2013	RP-61	RP-131284	1875		E-UTRAN TDD UE Rx-Tx Time difference test in FeICIC R12	12.0.0	12.1.0
09-2013	RP-61	RP-131284	1881		Clarification on UE Rx-Tx accuracy requirements in FelCIC R12	12.0.0	12.1.0
09-2013	RP-61	RP-131284	1883		Clarification on UE Rx-Tx measurement requirements in FelCIC R12	12.0.0	12.1.0
09-2013	RP-61	RP-131282	1886		Clarification on antenna port for timing and eCID test cases R12	12.0.0	12.1.0
09-2013	RP-61	RP-131282	1889	1	Addition of TDD serving cell measurement accuracy tests R12	12.0.0	12.1.0
09-2013	RP-61	RP-131303	1890		Introduction of Band 31 in 36.133	12.0.0	12.1.0
09-2013	RP-61	RP-131303	1891		Addition of New OCNG Pattern for 5MHz	12.0.0	12.1.0
09-2013	RP-61	RP-131303	1892		E-UTRAN FDD intra-frequency RSRP measurement	12.0.0	12.1.0
					accuracy for 5MHz bandwidth		
09-2013	RP-61	RP-131303	1893		E-UTRAN FDD-FDD inter-frequency RSRP measurement accuracy for 5MHz bandwidth	12.0.0	12.1.0
09-2013	RP-61	RP-131303	1894		E-UTRAN FDD Radio Link Monitoring Test for Out-of-sync for 5MHz Bandwidth	12.0.0	12.1.0
09-2013	RP-61	RP-131303	1895		E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in	12.0.0	12.1.0
00.0040	DD 04	DD 404000	4000		asynchronous cells for 5MHz bandwidth	40.00	40.4.0
09-2013	RP-61	RP-131303	1896		E-UTRAN FDD-FDD intra-frequency Cell Re-selection case for 5MHz bandwidth	12.0.0	12.1.0
09-2013	RP-61	RP-131303	1897		E-UTRAN FDD intra-frequency RRC re-establishment for 5MHz bandwidth	12.0.0	12.1.0
09-2013	RP-61	RP-131303	1898		E-UTRAN FDD - Contention Based Random Access Test for 5MHz bandwidth	12.0.0	12.1.0
09-2013	RP-61	RP-131303	1899	1	E-UTRAN FDD - UE Transmit Timing Accuracy Tests for 5MHz bandwidth	12.0.0	12.1.0
09-2013	RP-61	RP-131303	1900		E-UTRA FDD- UTRA FDD inter-RAT handover case for 5MHz bandwidth	12.0.0	12.1.0
09-2013	RP-61	RP-131303	1901	1	E-UTRA FDD- UTRA FDD CPICH RSCP measurement accuracy issues	12.0.0	12.1.0
09-2013	RP-61	RP-131285	1903		Clarification of Refesens in WB-RSRQ sections of 36.133	12.0.0	12.1.0
09-2013	RP-61	RP-131290	1905		R12 Remove the brackets of FelCIC side conditions R12	12.0.0	12.1.0
09-2013	RP-61	RP-131290 RP-131282	1905	1	Test cases of E-UTRAN FDD RSTD Measurement Accuracy		
				1	for Carrier Aggregation for 20MHz R12	12.0.0	12.1.0
09-2013	RP-61	RP-131282	1913	1	Test cases of E-UTRAN TDD RSTD Measurement Accuracy for Carrier Aggregation for 20MHz R12	12.0.0	12.1.0
09-2013	RP-61	RP-131284	1916		Correction to SCH Es/lot side condition for intra-frequency	12.0.0	12.1.0
		1	I	I	measurements under time domain measurement resource	I	ĺ

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09-2013	RP-61	RP-131303	1919		E-UTRAN FDD " Non-contention Based Random Access Test for 5MHz bandwidth	12.0.0	12.1.0
09-2013	RP-61	RP-131282	1921		Modification on the requirement for PCell interruption for Rel-	12.0.0	12.1.0
09-2013	RP-61	RP-131303	1922		E-UTRAN FDD " Timing Advance Accuracy Test for 5MHz bandwidth	12.0.0	12.1.0
09-2013	RP-61	RP-131282	1928		Phase II CA 20 MHz Tests: Event triggered reporting on deactivating SCell and and interruption probability without DRX	12.0.0	12.1.0
09-2013	RP-61	RP-131303	1945	1	CR on Applicability of 5MHz Test Cases	12.0.0	12.1.0
09-2013	RP-61	RP-131303	1946	1	E-UTRAN FDD Radio Link Monitoring Test for In-Sync for 5MHz	12.0.0	12.1.0
09-2013	RP-61	RP-131303	1947		E-UTRAN FDD Intra-frequency handover test for 5MHz Channel Bandwidth	12.0.0	12.1.0
09-2013	RP-61	RP-131303	1948		E-UTRAN FDD Intra-frequency RSRQ Accuracy Test for 5MHz Channel Bandwidth	12.0.0	12.1.0
09-2013	RP-61	RP-131293	1952		Editorial corrections RRM	12.0.0	12.1.0
09-2013	RP-61	RP-131303	1954		E-UTRAN FDD Inter-frequency RSRQ Accuracy Test for 5MHz Channel Bandwidth	12.0.0	12.1.0
09-2013	RP-61	RP-131293	1955		Clarification of CGI reading requirements	12.0.0	12.1.0
09-2013	RP-61	RP-131303	1958	2	E-UTRAN FDD Radio Link Monitoring Test for In-Sync for 5MHz with DRX	12.0.0	12.1.0
09-2013	RP-61	RP-131285	1961		Editorial corrections in capturing RF requirements	12.0.0	12.1.0
09-2013	RP-61	RP-131282	1964		Clarification on tests for multiple bandwidths	12.0.0	12.1.0
09-2013 09-2013	RP-61 RP-61	RP-131282 RP-131283	1969 1970		CR on PCell interrutptions Time stamp accuracy for RLF and handover failure reporting	12.0.0 12.0.0	12.1.0 12.1.0
					with eMDT		
09-2013 09-2013	RP-61 RP-61	RP-131303 RP-131303	1971 1972		FDD reference measurement channels for 5 MHz tests Part II RRM tests: UE intra-frequency measurements with	12.0.0 12.0.0	12.1.0 12.1.0
					synchronous cells in DRX FDD		
09-2013	RP-61	RP-131303	1973		Part II RRM tests: E-UTRAN FDD - UTRAN FDD event triggered reporting under fading propagation conditions	12.0.0	12.1.0
09-2013	RP-61	RP-131284	1978		Correction of cell identification test case with FeICIC	12.0.0	12.1.0
09-2013	RP-61	RP-131284	1984		RLM requirements correction	12.0.0	12.1.0
09-2013	RP-61	RP-131284	1988		Clarification on antenna ports in the measured and aggressor cells for UE Rx-Tx with FelCIC	12.0.0	12.1.0
09-2013	RP-61	RP-131290	1990		FeICIC FDD Test for In-sync With MBSFN ABS for Rel. 12	12.0.0	12.1.0
09-2013 09-2013	RP-61 RP-61	RP-131290 RP-131303	1992 1993		FelCIC TDD Test for In-sync With MBSFN ABS for Rel. 12 Correction of the SNR value of Out of sync RLM test for 5MHz	12.0.0 12.0.0	12.1.0 12.1.0
12-2013	RP-62	RP-131927	1996		Corrections to CA event triggered tests on deactivated SCell with PCell interruption in non-DRX (Rel-12)	12.1.0	12.2.0
12-2013	RP-62	RP-131928	2003		Corrections to CA Interruption Requirements	12.1.0	12.2.0
12-2013	RP-62	RP-131926	2009		CRS Es/lot for eICIC RSRP, RSRQ with MBSFN ABS Test Cases	12.1.0	12.2.0
12-2013	RP-62	RP-131941	2010		Correction to RSTD measurement accuracy side condition for Band 31	12.1.0	12.2.0
12-2013	RP-62	RP-131928	2013		Amendment on SCell Activation Delay Requirements for other activation actions	12.1.0	12.2.0
12-2013	RP-62	RP-131928	2016		Amendment on SCell Activation Delay Requirements in case no RS for measurement	12.1.0	12.2.0
12-2013	RP-62	RP-131936	2019		Correction to the SNR values for RLM tests with MBSFN ABS in FelCIC R12	12.1.0	12.2.0
12-2013	RP-62	RP-131936	2023		Correction for the RSRP/RSRQ test cases in FelCIC R12	12.1.0	12.2.0
12-2013	RP-62	RP-131928	2031	1	CR on PCell Interruptions For Inter-band CA During Measurements	12.1.0	12.2.0
12-2013	RP-62	RP-131939	2039		Introduction of E-UTRAN TDD WB-RSRQ test case R12	12.1.0	12.2.0
12-2013	RP-62	RP-131925	2044		Correction of Proximity Indication Test Case Not implemented as it is not based on the latest version of the spec	12.1.0	12.2.0
12-2013	RP-62	RP-131939	2053		Clarifications for intra-band non-contiguous CA R12	12.1.0	12.2.0
12-2013	RP-62	RP-131939	2058		Inter-frequency WB-RSRQ FDD test case	12.1.0	12.2.0
12-2013	RP-62	RP-131928	2071		Clarification on Pcell Interruption shall not occur before SF n+5	12.1.0	12.2.0
12-2013	RP-62	RP-131925	2078		Correction in RSTD requirements	12.1.0	12.2.0
12-2013	RP-62	RP-131939	2080		Editorial corrections RRM	12.1.0	12.2.0
12-2013	RP-62	RP-131939	2084	1	Band simplification	12.1.0	12.2.0
12-2013	RP-62	RP-131931	2091		Requirements clarification under different BWs in FeICIC	12.1.0	12.2.0
12-2013 12-2013	RP-62 RP-62	RP-131931 RP-131936	2095 2097	1	Correction in cell search FeICIC test cases Correct ABS pattern for FeICIC for In-sync with MBSFN ABS	12.1.0 12.1.0	12.2.0 12.2.0
		RP-131936		'	for Rel. 12		
12-2013 12-2013	RP-62 RP-62	RP-131926 RP-131942	2104 2106	1	Correction to Test cases A.9.2.9 and A.9.2.10 Bands applicability in RSRP, RSRQ FDD-FDD Inter	12.1.0 12.1.0	12.2.0 12.2.0
12-2013	KF-02	KF-131942	2100	1	frequency tests for 5MHz Bandwidth	12.1.0	12.2.0

		T = = -					
12-2013	RP-62	RP-131925	2111		Corrections to CGI Reading in Autonomous Gap	12.1.0	12.2.0
12-2013	RP-62	RP-131936	2123		Remove the brackets of SNR values in RLM test cases in FelCIC R12	12.1.0	12.2.0
12-2013	RP-62	RP-131967	2129		Correction on RMC pattern for 5MHz UE Transmit Timing Accuracy Tests	12.1.0	12.2.0
12-2013	RP-62	RP-131928	2135		CSI Reporting in SCell Activation Requirements	12.1.0	12.2.0
12-2013	RP-62	RP-131927	2143		Editorial corrections RRM	12.1.0	12.2.0
12-2013	RP-62	RP-131939	2145		Applying band simplification	12.1.0	12.2.0
12-2013	RP-62	RP-131939	2151		Correction to MTA requirements	12.1.0	12.2.0
12-2013	RP-62	RP-131925	2155		Correction in RSTD test cases	12.1.0	12.2.0
12-2013	RP-62	RP-131931	2157		Correction to interference clarification in FelCIC requirements	12.1.0	12.2.0
03-2014	RP-63	RP-140389	2236		Band simplification clean up	12.2.0	12.3.0
03-2014	RP-63	RP-140368	2234		Missing condition in CGI identification requirements	12.2.0	12.3.0
03-2014	RP-63	RP-140368	2224		CSI Reporting in SCell Activation Requirements	12.2.0	12.3.0
03-2014	RP-63	RP-140368	2258		Alignment between interruption requirements for RSTD and	12.2.0	12.3.0
					mobillity measurements for SCell		
03-2014	RP-63	RP-140367	2263		Correction of Proximity Indication Test Case	12.2.0	12.3.0
03-2014	RP-63	RP-140380	2259		Addition of new OCNG pattern for E-UTRA TDD with 5MHz	12.2.0	12.3.0
					bandwidth		
03-2014	RP-63	RP-140380	2260		Addition of new RMC for E-UTRA TDD with 5MHz bandwidth	12.2.0	12.3.0
03-2014	RP-63	RP-140380	2261		Addition of OCNG pattern for E-UTRA FDD with 5MHz	12.2.0	12.3.0
					bandwidth without MBSFN		
03-2014	RP-63	RP-140381	2169		Updates on test case A.9.1.17 FDD—FDD Inter frequency	12.2.0	12.3.0
1					case for 5MHz Bandwidth for R12		
03-2014	RP-63	RP-140389	2170	1	Correction on the SNR values of in-sync RLM test for 5MHz	12.2.0	12.3.0
03-2014	RP-63	RP-140371	2200	1	Clarification of BW applicability in Rx-Tx Time Difference	12.2.0	12.3.0
03-2014	11.5-03	131403/1	2200	'	measurement R12	12.2.0	12.3.0
00 0044	DD 60	DD 440000	0400			40.00	40.00
03-2014	RP-63	RP-140389	2182		Clarification on FDD reference measurement channels for 5	12.2.0	12.3.0
00.004.4	DD 00	DD 440000	0404		MHz tests	1000	40.0.0
03-2014	RP-63	RP-140368	2181		Correction on PDSCH allocation in PRS subframe r12	12.2.0	12.3.0
03-2014	RP-63	RP-140367	2192		PRS_RA corrections	12.2.0	12.3.0
06-2014	RP-64	RP-140650	2331	3	Introduction of test cases for 5MHz +5MHz : absolute and	12.3.0	12.4.0
					relative RSRQ accuracies in CA for FDD and TDD		
					The CR was not implemented as it contained the wrong		
					content.		
06-2014	RP-64	RP-140743	2366	1	SCell activation and deactivation delay test case for known	12.3.0	12.4.0
					SCell		
06-2014	RP-64	RP-140910	2312		Clarification on UE Transmit Timing Accuracy test cases in	12.3.0	12.4.0
					DRX mode R12		
06-2014	RP-64	RP-140910	2267		RRM: Clean-up of time offset between cells in RSTD tests	12.3.0	12.4.0
					(Rel-12)		
06-2014	RP-64	RP-140910	2354		RSTD inter-frequency requirements applicability	12.3.0	12.4.0
06-2014	RP-64	RP-140911	2382		RRM: Remove square brackets from elCIC RLM test	12.3.0	12.4.0
00 20					requirement (Rel-12)	12.0.0	
06-2014	RP-64	RP-140911	2379		Correction to periodicity of ABS pattern in elCIC RRM test	12.3.0	12.4.0
00-2014	111 -04	10311	2313		cases	12.5.0	12.4.0
06-2014	RP-64	RP-140911	2315		Correction for OCNG pattern number in RRM tests R12	12.3.0	12.4.0
06-2014	RP-64	RP-140911	2302		Introduce the CGI reading requirements in CA R12	12.3.0	12.4.0
06-2014	RP-64	RP-140911	2360	1	Test case corrections for elCIC	12.3.0	12.4.0
06-2014	RP-64	RP-140911	2278		Removing DPCH for handover from E-UTRAN to UTRA TDD	12.3.0	12.4.0
					for Rel-12		
06-2014	RP-64	RP-140911	2422		Clean up the correction on PDSCH allocation in PRS	12.3.0	12.4.0
	<u> </u>				subframe R12		
06-2014	RP-64	RP-140911	2319	1 7	Clarification on E-UTRAN TDD - UE Timing Advance	12.3.0	12.4.0
					Adjustment Accuracy Test R12		
06-2014	RP-64	RP-140914	2416		Correction to PCI configuration conditions in FeICIC tests	12.3.0	12.4.0
		<u> </u>	<u></u>	<u> </u>	R12		
06-2014	RP-64	RP-140914	2338		CQI feedback periodicity correction for RLM in elCIC/FelCIC	12.3.0	12.4.0
		<u> </u>	<u></u>	<u> </u>	test setup		
06-2014	RP-64	RP-140916	2307		E-UTRAN TDD - UE Timing Advance Adjustment Accuracy	12.3.0	12.4.0
1					Test for Scell in sTAG		
06-2014	RP-64	RP-140916	2340	1	Test case for RACH on SCell	12.3.0	12.4.0
06-2014	RP-64	RP-140916	2306	 	E-UTRAN FDD - UE Timing Advance Adjustment Accuracy	12.3.0	12.4.0
33 2017	57	1 140010			Test for Scell in sTAG	12.0.0	12.7.0
06-2014	RP-64	RP-140918	2357		Editorial corrections RRM	12.3.0	12.4.0
	RP-64			 			
06-2014		RP-140918	2364	 	Clean up for Band 29	12.3.0	12.4.0
06-2014	RP-64	RP-140918	2445		Removing square brackets in FelCIC test cases	12.3.0	12.4.0
06-2014	RP-64	RP-140923	2387		E-UTRAN FDD RSTD measurement reporting in carrier	12.3.0	12.4.0
					aggregation for 10MHz+5MHz		
06-2014	RP-64	RP-140923	2388		E-UTRAN TDD RSTD measurement reporting in carrier	12.3.0	12.4.0
				1	aggregation for 10MHz+5MHz		
06-2014	RP-64	RP-140923	2389		E-UTRAN FDD RSTD measurement accuracy in CA for	12.3.0	12.4.0
					10MHz+5MHz		
		-					

100Hz+cMHz 100Hz+cMHz 120								
D6-2014 RP-64 RP-140923 2290 E-UTRAN FDD absolute and relative RSRP accuracies in CA 12.3.0	0 12.4.0	12.3.0	,		2390	RP-140923	RP-64	06-2014
D6-2014 RP-64 RP-140923 2291 E-UTRAN TDD absolute and relative RSRP accuracies in CA 12.30 Cor 10MHz-sMHz	0 12.4.0	12.3.0	E-UTRAN FDD absolute and relative RSRP accuracies in CA		2290	RP-140923	RP-64	06-2014
D6-2014 RP-64 RP-140928 2339 Introduction of Band 32/XXXII 1 1 1 1 1 1 1 1 1	0 12.4.0	12.3.0	E-UTRAN TDD absolute and relative RSRP accuracies in CA		2291	RP-140923	RP-64	06-2014
	0 40.46	40.00			0000	DD 440000	DD 04	00.004.4
D6-2014 RP-64 RP-140930 2374 RP-64 RP-140930 2374 RP-64 RP-64 RP-140930 2374 RP-64 RP-140930 2374 RP-64 RP-140930 2374 RP-64 RP-140937 2412 Introduction of test cases for SMHz + SMHz : RSTD				_				
D6-2014 RP-64 RP-1409307 2412 1 RRM requirements for TDD-FDD CA 2.3.0 12.3.0				1				
D6-2014 RP-64 RP-140937 2412 1 Introduction of test cases for SMHz +SMHz : RSTD Measurement Accuracy in Carrier Aggregation for 5 + 5MHz bandwidth D6-2014 RP-64 RP-140937 2330 1 Introduction of test cases for SMHz +SMHz : absolute and relative RSRP accuracies in CA for FDD and TDD 12.3.0 D6-2014 RP-64 RP-140937 2410 1 Introduction of test cases for SMHz +SMHz : RSTD 12.3.0 D6-2014 RP-64 RP-140937 2332 2 Introduction of test cases for SMHz +SMHz : EVENT triggered reporting on deactivating Scells in non-DRX FDD and TDD Introduction of test cases for SMHz +SMHz : EVENT triggered reporting on deactivating Scells in non-DRX FDD and TDD Introduction of test cases for SMHz +SMHz : EVENT triggered reporting on deactivating Scells in non-DRX FDD and TDD Introduction of test cases for SMHz +SMHz : EVENT Revent triggered reporting on deactivation of deactivated Scell with PCDI and TDD Introduction of test cases for SMHz +SMHz : EVENT Revent triggered reporting on deactivation of experiment reporting in the production of test cases for SMHz +SMHz : EVENT Revent triggered reporting on deactivation 12.3.0 SCENT REVENT REV				1				
Measurement Accuracy in Carrier Aggregation for 5 + 5MHz bandwidth				1				
relative RSRP accuracies in CA for FDD and TDD	0 12.4.0	12.3.0	Measurement Accuracy in Carrier Aggregation for 5 + 5MHz	1	2412	RP-140937	RP-64	06-2014
Measurement Reporting Test Case 12.3.0	0 12.4.0	12.3.0		1	2330	RP-140937	RP-64	06-2014
06-2014 RP-64 RP-140937 2332 2 Introduction of test cases for 5MHz + 5MHz : Event tiggered reporting on deactivating Scells in non-DRX Deach and TDD	0 12.4.0	12.3.0		1	2410	RP-140937	RP-64	06-2014
06-2014 RP-64 RP-140937 2415 1	0 12.4.0	12.3.0	Introduction of test cases for 5MHz +5MHz : Event triggered	2	2332	RP-140937	RP-64	06-2014
06-2014 RP-64 RP-140939 2294 E-UTRAN TDD absolute and relative RSRQ accuracies in CA 12.3.0	0 12.4.0	12.3.0	Introduction of test cases for 5MHz +5MHz : E-UTRA event triggered reporting on deactivated SCell with PCell	1	2415	RP-140937	RP-64	06-2014
Scells and interruption probability (0.5%) without DRX for 10MHz+SMHz	0 12.4.0	12.3.0	E-UTRAN TDD absolute and relative RSRQ accuracies in CA		2294	RP-140939	RP-64	06-2014
RP-64 RP-140939 2386 E-UTRAN TDD Event triggered reporting on deactivating Scells and interruption probability (0.5%) without DRX for 10MHz+5MHz E-UTRAN FDD absolute and relative RSRQ accuracies in CA 12.3.0	0 12.4.0	12.3.0	Scells and interruption probability (0.5%) without DRX for		2385	RP-140939	RP-64	06-2014
D6-2014 RP-64 RP-140939 2292 E-UTRAN FDD absolute and relative RSRQ accuracies in CA for 5MHz+10MHz 12.3.0	0 12.4.0	12.3.0	E-UTRAN TDD Event triggered reporting on deactivating Scells and interruption probability (0.5%) without DRX for		2386	RP-140939	RP-64	06-2014
D6-2014 RP-64 RP-140939 2289 E-UTRAN TDD Event triggered reporting under deactivated Scell in non-DRX for 10MHz+5MHz E-UTRAN FDD Event triggered reporting under deactivated Scell in non-DRX for 10MHz+5MHz E-UTRAN FDD Event triggered reporting under deactivated Scell in non-DRX for 10MHz+5MHz E-UTRAN FDD Event triggered reporting under deactivated Scell in non-DRX for 10MHz+5MHz E-UTRAN FDD Event triggered reporting under deactivated Scell in non-DRX for 10MHz+5MHz E-UTRAN FDD Event triggered reporting under deactivated Scell in non-DRX for 10MHz+5MHz E-UTRAN FDD Event triggered reporting under deactivated Scell in non-DRX for 10MHz+5MHz E-UTRAN FDD Event triggered reporting under deactivated Scell in non-DRX for 10MHz+5MHz E-UTRAN FDD FD FD FD FD FD FD FD FD FD FD FD FD	0 12.4.0	12.3.0	E-UTRAN FDD absolute and relative RSRQ accuracies in CA		2292	RP-140939	RP-64	06-2014
06-2014 RP-64 RP-140939 2288 E-UTRAN FDD Event triggered reporting under deactivated Scell in non-DRX for 10MHz+5MHz 12.3.0 06-2014 RP-64 RP-140945 2384 Correct Correlation Matrix and Antenna Configuration for RM test cases A.8 12.3.0 06-2014 RP-64 RP-140945 2346 1 E-UTRAN TDD - UE Transmit Timing Accuracy Tests for Scell in STAG 12.3.0 06-2014 RP-64 RP-140945 2383 Correct Correlation Matrix and Antenna Configuration for RM test cases A.4, A.7 12.3.0 06-2014 RP-64 RP-140945 2336 2 New Test Case for UE Transmit Timing Accuracy requirements in DRX 12.3.0 06-2014 RP-64 RP-140945 2268 1 UE Behaviour after Measurement Gap 12.3.0 06-2014 RP-64 RP-140945 2345 1 E-UTRAN FDD - UE Transmit Timing Accuracy Tests for Scell in sTAG 12.3.0 06-2014 RP-64 RP-140945 2419 Editorial correction for band 31 in 36.133 12.3.0 06-2014 RP-64 RP-140959 2376 3 Introduce the support of 3DL CA to TS 36.133 Section 7.8	0 12.4.0	12.3.0	E-UTRAN TDD Event triggered reporting under deactivated		2289	RP-140939	RP-64	06-2014
06-2014 RP-64 RP-140945 2384 Correct Correlation Matrix and Antenna Configuration for RRM test cases A.8 12.3.0 06-2014 RP-64 RP-140945 2346 1 E-UTRAN TDD - UE Transmit Timing Accuracy Tests for SCell in STAG 12.3.0 06-2014 RP-64 RP-140945 2383 Correct Correlation Matrix and Antenna Configuration for RRM test cases A.4, A.7 12.3.0 06-2014 RP-64 RP-140945 2336 2 New Test Case for UE Transmit Timing Accuracy requirements in DRX 12.3.0 06-2014 RP-64 RP-140945 2268 1 UE Behaviour after Measurement Gap 12.3.0 06-2014 RP-64 RP-140945 2345 1 E-UTRAN FDD - UE Transmit Timing Accuracy Tests for SCell in STAG 12.3.0 06-2014 RP-64 RP-140945 2419 Editorial correction for band 31 in 36.133 12.3.0 06-2014 RP-64 RP-140959 2395 2 Introduce RSRP/RSRQ measurement accuracy requirements for 3DL CA 12.3.0 06-2014 RP-64 RP-140959 2376 3 Introduce the support of 3DL CA to TS 36.133 Section 7.8 </td <td>0 12.4.0</td> <td>12.3.0</td> <td>E-UTRAN FDD Event triggered reporting under deactivated</td> <td></td> <td>2288</td> <td>RP-140939</td> <td>RP-64</td> <td>06-2014</td>	0 12.4.0	12.3.0	E-UTRAN FDD Event triggered reporting under deactivated		2288	RP-140939	RP-64	06-2014
06-2014 RP-64 RP-140945 2346 1 E-UTRAN TDD - UE Transmit Timing Accuracy Tests for SCell in sTAG 12.3.0 06-2014 RP-64 RP-140945 2383 Correct Correlation Matrix and Antenna Configuration for RRM test cases A.4, A.7 12.3.0 06-2014 RP-64 RP-140945 2336 2 New Test Case for UE Transmit Timing Accuracy requirements in DRX 12.3.0 06-2014 RP-64 RP-140945 2268 1 UE Behaviour after Measurement Gap 12.3.0 06-2014 RP-64 RP-140945 2345 1 E-UTRAN FDD - UE Transmit Timing Accuracy Tests for SCell in sTAG 12.3.0 06-2014 RP-64 RP-140945 2345 1 Editorial correction for band 31 in 36.133 12.3.0 06-2014 RP-64 RP-140959 2395 2 Introduce RSRP/RSRQ measurement accuracy requirements for 3DL CA 12.3.0 06-2014 RP-64 RP-140959 2376 3 Introduce the support of 3DL CA to TS 36.133 Section 7.1 "UE transmit timing" 12.3.0 06-2014 RP-64 RP-140959 2373 2 SCell activation a	0 12.4.0	12.3.0	Correct Correlation Matrix and Antenna Configuration for		2384	RP-140945	RP-64	06-2014
06-2014 RP-64 RP-140945 2383 Correct Correlation Matrix and Antenna Configuration for RRM test cases A.4, A.7 12.3.0 06-2014 RP-64 RP-140945 236 2 New Test Case for UE Transmit Timing Accuracy requirements in DRX 12.3.0 06-2014 RP-64 RP-140945 2268 1 UE Behaviour after Measurement Gap 12.3.0 06-2014 RP-64 RP-140945 2345 1 E-UTRAN FDD - UE Transmit Timing Accuracy Tests for Scell in sTAG 12.3.0 06-2014 RP-64 RP-140945 2419 Editorial correction for band 31 in 36.133 12.3.0 06-2014 RP-64 RP-140959 2395 2 Introduce RSRP/RSRQ measurement accuracy requirements for 3DL CA 12.3.0 06-2014 RP-64 RP-140959 2376 3 Introduce the support of 3DL CA to TS 36.133 Section 7.8 "Interruptions with Carrier Aggregation" 12.3.0 06-2014 RP-64 RP-140959 2375 2 Introduce the support of 3DL CA to TS 36.133 Section 7.1 "UE transmit timing" 12.3.0 06-2014 RP-64 RP-141959 2373 2 SCell	0 12.4.0	12.3.0	E-UTRAN TDD - UE Transmit Timing Accuracy Tests for	1	2346	RP-140945	RP-64	06-2014
06-2014 RP-64 RP-140945 2336 2 New Test Case for UE Transmit Timing Accuracy requirements in DRX 12.3.0 06-2014 RP-64 RP-140945 2268 1 UE Behaviour after Measurement Gap 12.3.0 06-2014 RP-64 RP-140945 2345 1 E-UTRAN FDD - UE Transmit Timing Accuracy Tests for SCell in sTAG 12.3.0 06-2014 RP-64 RP-140945 2419 Editorial correction for band 31 in 36.133 12.3.0 06-2014 RP-64 RP-140959 2395 2 Introduce RSRP/RSRQ measurement accuracy requirements for 3DL CA 12.3.0 06-2014 RP-64 RP-140959 2376 3 Introduce the support of 3DL CA to TS 36.133 Section 7.8 12.3.0 06-2014 RP-64 RP-140959 2375 2 Introduce the support of 3DL CA to TS 36.133 Section 7.1 12.3.0 06-2014 RP-64 RP-140959 2373 2 SCell activation and deactivation delay requirements for 3 DL CA 12.3.0 09-2014 RP-65 RP-141530 2474 Correction to periodicity of ABS pattern in felCIC RRM test cases	0 12.4.0	12.3.0	Correct Correlation Matrix and Antenna Configuration for		2383	RP-140945	RP-64	06-2014
06-2014 RP-64 RP-140945 2345 1 E-UTRAN FDD - UE Transmit Timing Accuracy Tests for SCell in sTAG 12.3.0 06-2014 RP-64 RP-140945 2419 Editorial correction for band 31 in 36.133 12.3.0 06-2014 RP-64 RP-140959 2395 2 Introduce RSRP/RSRQ measurement accuracy requirements for 3DL CA 12.3.0 06-2014 RP-64 RP-140959 2376 3 Introduce the support of 3DL CA to TS 36.133 Section 7.8 "Interruptions with Carrier Aggregation" 12.3.0 06-2014 RP-64 RP-140959 2375 2 Introduce the support of 3DL CA to TS 36.133 Section 7.1 "UE transmit timing" 12.3.0 06-2014 RP-64 RP-140959 2373 2 SCell activation and deactivation delay requirements for 3 DL CA to TS 36.133 Section 7.1 "UE transmit timing" 12.3.0 09-2014 RP-65 RP-141526 2527 Tolerance levels for measurements on UTRAN 12.4.0 09-2014 RP-65 RP-141530 2474 Correction to periodicity of ABS pattern in felCIC RRM test cases 12.4.0 09-2014 RP-65 RP-141531 2515 1 <td>0 12.4.0</td> <td>12.3.0</td> <td>New Test Case for UE Transmit Timing Accuracy</td> <td>2</td> <td>2336</td> <td>RP-140945</td> <td>RP-64</td> <td>06-2014</td>	0 12.4.0	12.3.0	New Test Case for UE Transmit Timing Accuracy	2	2336	RP-140945	RP-64	06-2014
06-2014 RP-64 RP-140945 2345 1 E-UTRAN FDD - UE Transmit Timing Accuracy Tests for SCell in sTAG 12.3.0 06-2014 RP-64 RP-140945 2419 Editorial correction for band 31 in 36.133 12.3.0 06-2014 RP-64 RP-140959 2395 2 Introduce RSRP/RSRQ measurement accuracy requirements for 3DL CA 12.3.0 06-2014 RP-64 RP-140959 2376 3 Introduce the support of 3DL CA to TS 36.133 Section 7.8 "Interruptions with Carrier Aggregation" 12.3.0 06-2014 RP-64 RP-140959 2375 2 Introduce the support of 3DL CA to TS 36.133 Section 7.1 "UE transmit timing" 12.3.0 06-2014 RP-64 RP-140959 2373 2 SCell activation and deactivation delay requirements for 3 DL CA to TS 36.133 Section 7.1 "UE transmit timing" 12.3.0 09-2014 RP-65 RP-141526 2527 Tolerance levels for measurements on UTRAN 12.4.0 09-2014 RP-65 RP-141531 2474 Correction to periodicity of ABS pattern in felCIC RRM test cases 12.4.0 09-2014 RP-65 RP-141531 2515 1 <td>0 12.4.0</td> <td>12.3.0</td> <td>UE Behaviour after Measurement Gap</td> <td>1</td> <td>2268</td> <td>RP-140945</td> <td>RP-64</td> <td>06-2014</td>	0 12.4.0	12.3.0	UE Behaviour after Measurement Gap	1	2268	RP-140945	RP-64	06-2014
06-2014 RP-64 RP-140959 2395 2 Introduce RSRP/RSRQ measurement accuracy requirements for 3DL CA 12.3.0 06-2014 RP-64 RP-140959 2376 3 Introduce the support of 3DL CA to TS 36.133 Section 7.8 "Interruptions with Carrier Aggregation" 12.3.0 06-2014 RP-64 RP-140959 2375 2 Introduce the support of 3DL CA to TS 36.133 Section 7.1 "UE transmit timing" 12.3.0 06-2014 RP-64 RP-140959 2373 2 SCell activation and deactivation delay requirements for 3 DL CA 12.3.0 09-2014 RP-65 RP-141526 2527 Tolerance levels for measurements on UTRAN 12.4.0 09-2014 RP-65 RP-141530 2474 Correction to periodicity of ABS pattern in felCIC RRM test cases 12.4.0 09-2014 RP-65 RP-141531 2515 1 Maximum transmission timing difference 12.4.0 09-2014 RP-65 RP-141536 2502 Introduction of test cases for 5MHz +5MHz : absolute and 12.4.0	0 12.4.0	12.3.0	E-UTRAN FDD - UE Transmit Timing Accuracy Tests for	1		RP-140945	RP-64	06-2014
06-2014 RP-64 RP-140959 2395 2 Introduce RSRP/RSRQ measurement accuracy requirements for 3DL CA 12.3.0 06-2014 RP-64 RP-140959 2376 3 Introduce the support of 3DL CA to TS 36.133 Section 7.8 "Interruptions with Carrier Aggregation" 12.3.0 06-2014 RP-64 RP-140959 2375 2 Introduce the support of 3DL CA to TS 36.133 Section 7.1 "UE transmit timing" 12.3.0 06-2014 RP-64 RP-140959 2373 2 SCell activation and deactivation delay requirements for 3 DL CA 12.3.0 09-2014 RP-65 RP-141526 2527 Tolerance levels for measurements on UTRAN 12.4.0 09-2014 RP-65 RP-141530 2474 Correction to periodicity of ABS pattern in felCIC RRM test cases 12.4.0 09-2014 RP-65 RP-141531 2515 1 Maximum transmission timing difference 12.4.0 09-2014 RP-65 RP-141536 2502 Introduction of test cases for 5MHz +5MHz : absolute and 12.4.0	0 12.4.0	12.3.0	Editorial correction for band 31 in 36.133		2419	RP-140945	RP-64	06-2014
"Interruptions with Carrier Aggregation"		12.3.0	Introduce RSRP/RSRQ measurement accuracy requirements	2		RP-140959	RP-64	06-2014
"UE transmit timing"	0 12.4.0	12.3.0	"Interruptions with Carrier Aggregation"	3	2376	RP-140959	RP-64	06-2014
CA O9-2014 RP-65 RP-141526 2527 Tolerance levels for measurements on UTRAN 12.4.0 O9-2014 RP-65 RP-141530 2474 Correction to periodicity of ABS pattern in felCIC RRM test cases O9-2014 RP-65 RP-141531 2515 1 Maximum transmission timing difference 12.4.0 O9-2014 RP-65 RP-141536 2502 Introduction of test cases for 5MHz +5MHz : absolute and 12.4.0 O9-2014 RP-65 RP-141536 2502 Introduction of test cases for 5MHz +5MHz : absolute and 12.4.0 O9-2014 RP-65 RP-141536 2502 O9-2014 RP-65 RP-141536 O9-2014 O9-2014 RP-65 RP-141536 O9-2014	0 12.4.0	12.3.0	"UE transmit timing"	2	2375	RP-140959	RP-64	06-2014
09-2014 RP-65 RP-141530 2474 Correction to periodicity of ABS pattern in felCIC RRM test cases 12.4.0 09-2014 RP-65 RP-141531 2515 1 Maximum transmission timing difference 12.4.0 09-2014 RP-65 RP-141536 2502 Introduction of test cases for 5MHz +5MHz : absolute and 12.4.0	0 12.4.0	12.3.0		2		RP-140959	RP-64	06-2014
09-2014 RP-65 RP-141530 2474 Correction to periodicity of ABS pattern in felCIC RRM test cases 12.4.0 09-2014 RP-65 RP-141531 2515 1 Maximum transmission timing difference 12.4.0 09-2014 RP-65 RP-141536 2502 Introduction of test cases for 5MHz +5MHz : absolute and 12.4.0	0 12.5.0	12.4.0			2527	RP-141526	RP-65	09-2014
09-2014 RP-65 RP-141536 2502 Introduction of test cases for 5MHz +5MHz : absolute and 12.4.0	0 12.5.0	12.4.0				RP-141530	RP-65	09-2014
09-2014 RP-65 RP-141536 2502 Introduction of test cases for 5MHz +5MHz : absolute and 12.4.0	0 12.5.0	12.4.0	Maximum transmission timing difference	1	2515	RP-141531	RP-65	09-2014
I I Relative RSRQ accuracies in CA for FDD and TDD		12.4.0	ů					
	0 12.5.0	12.4.0	Modification on E-UTRAN event triggered reporting under		2481	RP-141539	RP-65	09-2014
	0 12.5.0	12.4.0	Introduction of BeaconRSSI measurements for WLAN/3GPP	2	2523	RP-141545	RP-65	09-2014
	0 12.5.0	12.4.0			2492	RP-141554	RP-65	09-2014
		12.4.0	Requirements for UE Measurements Procedures in					
	0 12.5.0	12.4.0		1	2454	RP-141562	RP-65	09-2014
		12.4.0		•				
		12.4.0		1	1			
difference between TAGs R12			difference between TAGs R12					
	0 12.5.0	12.4.0	Applicability of requirements	1	2496	RP-141562	RP-65	09-2014

09-2014	RP-65	RP-141562	2510		Note to clarify that certain requirements do not apply to band	12.4.0	12.5.0
00.0011	DD 05	DD 444700	0.474		32	10.10	10.5.0
09-2014 12-2014	RP-65 RP-66	RP-141700 RP-142176	2471 2484	2	Clarification for ACK/NACK feedback of CGI measurement Introducing measurement accuracy requirements for UE	12.4.0 12.5.0	12.5.0 12.6.0
12-2014	KF-00	KF-142176	2404	2	category 0 in TS36.133 Clause 9	12.5.0	12.0.0
12-2014	RP-66	RP-142176	2506	3	Measurements requirements for UE category 0 with 1 Rx	12.5.0	12.6.0
12-2014	RP-66	RP-142143	2534	-	Correction of PRS Signal Levels in RSTD Reporting Tests	12.5.0	12.6.0
12-2014	RP-66	RP-142144	2538	-	Correction of Es/Noc values in inter-frequency RSTD tests	12.5.0	12.6.0
12-2014	RP-66	RP-142174	2547	1	Introduction of PDSCH FRC for TDD UL-DL configuration 0	12.5.0	12.6.0
12-2014	RP-66	RP-142144	2553	1	Clarification on time to identify the target UTRA TDD cell for	12.5.0	12.6.0
12-2014	RP-66	RP-142174	2555	1	blind redirection from E-UTRA to UTRA TDD CR on inter frequency RSRP test case for eIMTA	12.5.0	12.6.0
12-2014	RP-66	RP-142174	2556	1	CR on inter frequency RSRQ test case for eIMTA	12.5.0	12.6.0
12-2014	RP-66	RP-142147	2566	-	Correction to ABS pattern and CRS Es/lot in felCIC RRM test	12.5.0	12.6.0
					cases		
12-2014	RP-66	RP-142144	2569	-	SCell activation and deactivation delay test case for unknown	12.5.0	12.6.0
					SCell R12		
12-2014	RP-66	RP-142157	2573	2	Clarification on cell identification for TDD config 0	12.5.0	12.6.0
12-2014	RP-66	RP-142177	2585	1	RSRQ accuracy test case in TDD-FDD CA when Pcell is FDD R12	12.5.0	12.6.0
12-2014	RP-66	RP-142177	2586	1	RSRQ accuracy test case in TDD-FDD CA when Pcell is	12.5.0	12.6.0
12-2014	111 -00	101-142177	2300	1	TDD R12	12.5.0	12.0.0
12-2014	RP-66	RP-142147	2597	-	Correction on lo value in CA 20MHz RSRQ test case R12	12.5.0	12.6.0
12-2014	RP-66	RP-142163	2598	-	Correction on lo value in CA 10MHz+5MHz RSRQ test case	12.5.0	12.6.0
					R12		
12-2014	RP-66	RP-142188	2599	-	Range increase for RSRQ	12.5.0	12.6.0
12-2014	RP-66	RP-142188	2606	1	Clarification of parallel reporting criteria (E-UTRA)	12.5.0	12.6.0
12-2014	RP-66	RP-142164	2611	1	Interruptions with RSTD Measurements for 3DL CA	12.5.0	12.6.0
12-2014	RP-66	RP-142164	2614	-	RRM requirements for RSTD in 3 DL CA	12.5.0	12.6.0
12-2014 12-2014	RP-66 RP-66	RP-142177 RP-142176	2619 2630	1	RSRP accuracy test cases for TDD-FDD CA	12.5.0	12.6.0
12-2014	KP-00	RP-142176	2030	-	SI reading requirements for UE category 0 with 1 Rx in FDD, TDD and HD-FDD	12.5.0	12.6.0
12-2014	RP-66	RP-142144	2639	_	Changes to RSTD CA Reporting Delay tests	12.5.0	12.6.0
12-2014	RP-66	RP-142188	2640	-	Revision of RSRP absolute accuracy requirements in Rel-12	12.5.0	12.6.0
12-2014	RP-66	RP-142144	2644	-	Clarifications to RSTD values	12.5.0	12.6.0
12-2014	RP-66	RP-142144	2656	-	Correction to RSTD Intra Frequency Delay Test Case	12.5.0	12.6.0
12-2014	RP-66	RP-142144	2665	-	Correction on autonomous time adjustment in MTAG case	12.5.0	12.6.0
12-2014	RP-66	RP-142176	2666	-	Introduce RLM requirements for LC-MTC in TS36.133	12.5.0	12.6.0
12-2014	RP-66	RP-142174	2669	1	Introducing test case for TDD-TDD Inter-frequency event triggered reporting for TDD UL/DL configuration 0	12.5.0	12.6.0
12-2014	RP-66	RP-142179	2670	1	Introducing requirements for small cell enhancement in TS36.133	12.5.0	12.6.0
12-2014	RP-66	RP-142180	2671	2	Introducing interruption requirements for dual connectivity into TS36.133	12.5.0	12.6.0
12-2014	RP-66	RP-142162	2674	-	E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX for 20MHz+10MHz	12.5.0	12.6.0
12-2014	RP-66	RP-142162	2675	-	E-UTRAN TDD event triggered reporting on deactivating	12.5.0	12.6.0
						12.0.0	
12 2011	DD 66	DD 140160	2676		SCell with PCell interruption in non-DRX for 20MHz+10MHz		12.6.0
12-2014	RP-66	RP-142162	2676	-	E-UTRAN TDD RSTD Measurement Reporting Test Case for	12.5.0	12.6.0
12-2014	RP-66 RP-66	RP-142162	2676 2677	-	E-UTRAN TDD RSTD Measurement Reporting Test Case for 20MHz+10MHz		12.6.0
					E-UTRAN TDD RSTD Measurement Reporting Test Case for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz	12.5.0	
					E-UTRAN TDD RSTD Measurement Reporting Test Case for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for	12.5.0	
12-2014	RP-66	RP-142162	2677	-	E-UTRAN TDD RSTD Measurement Reporting Test Case for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz E-UTRAN TDD RSTD Measurement Accuracy in Carrier	12.5.0	12.6.0
12-2014	RP-66	RP-142162 RP-142162	2677 2678	1	E-UTRAN TDD RSTD Measurement Reporting Test Case for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 20MHz+10MHz Introducing positioning enhancement requirement for UE Rx-	12.5.0 12.5.0 12.5.0	12.6.0
12-2014 12-2014 12-2014 12-2014	RP-66 RP-66 RP-66	RP-142162 RP-142162 RP-142162 RP-142143	2677 2678 2679 2682	- 1 -	E-UTRAN TDD RSTD Measurement Reporting Test Case for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 20MHz+10MHz Introducing positioning enhancement requirement for UE Rx-Tx accuracy	12.5.0 12.5.0 12.5.0 12.5.0 12.5.0	12.6.0 12.6.0 12.6.0
12-2014 12-2014 12-2014 12-2014	RP-66 RP-66 RP-66 RP-66	RP-142162 RP-142162 RP-142162 RP-142143 RP-142144	2677 2678 2679 2682 2686	1	E-UTRAN TDD RSTD Measurement Reporting Test Case for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 20MHz+10MHz Introducing positioning enhancement requirement for UE Rx-Tx accuracy Correction on CA test cases in R12	12.5.0 12.5.0 12.5.0 12.5.0 12.5.0	12.6.0 12.6.0 12.6.0 12.6.0
12-2014 12-2014 12-2014 12-2014 12-2014 12-2014	RP-66 RP-66 RP-66 RP-66 RP-66	RP-142162 RP-142162 RP-142162 RP-142143 RP-142144 RP-142188	2677 2678 2679 2682 2686 2687	1 1	E-UTRAN TDD RSTD Measurement Reporting Test Case for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 20MHz+10MHz Introducing positioning enhancement requirement for UE Rx-Tx accuracy Correction on CA test cases in R12 Correction on E-UTRAN TDD – Non-Contention Based Random Access Test For Scell	12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0	12.6.0 12.6.0 12.6.0 12.6.0 12.6.0
12-2014 12-2014 12-2014 12-2014	RP-66 RP-66 RP-66 RP-66	RP-142162 RP-142162 RP-142162 RP-142143 RP-142144	2677 2678 2679 2682 2686	- 1 -	E-UTRAN TDD RSTD Measurement Reporting Test Case for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 20MHz+10MHz Introducing positioning enhancement requirement for UE Rx-Tx accuracy Correction on CA test cases in R12 Correction on E-UTRAN TDD – Non-Contention Based	12.5.0 12.5.0 12.5.0 12.5.0 12.5.0	12.6.0 12.6.0 12.6.0 12.6.0
12-2014 12-2014 12-2014 12-2014 12-2014 12-2014	RP-66 RP-66 RP-66 RP-66 RP-66	RP-142162 RP-142162 RP-142162 RP-142143 RP-142144 RP-142188	2677 2678 2679 2682 2686 2687	1 1	E-UTRAN TDD RSTD Measurement Reporting Test Case for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 20MHz+10MHz Introducing positioning enhancement requirement for UE Rx-Tx accuracy Correction on CA test cases in R12 Correction on E-UTRAN TDD – Non-Contention Based Random Access Test For Scell Introduction of RSRP measurement accuracy requirement for DRS based measurement Ecat clarification for iRAT	12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0	12.6.0 12.6.0 12.6.0 12.6.0 12.6.0
12-2014 12-2014 12-2014 12-2014 12-2014 12-2014	RP-66 RP-66 RP-66 RP-66 RP-66 RP-66	RP-142162 RP-142162 RP-142162 RP-142143 RP-142144 RP-142188 RP-142179	2677 2678 2679 2682 2686 2687	1 - 1 1	E-UTRAN TDD RSTD Measurement Reporting Test Case for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 20MHz+10MHz Introducing positioning enhancement requirement for UE Rx-Tx accuracy Correction on CA test cases in R12 Correction on E-UTRAN TDD – Non-Contention Based Random Access Test For Scell Introduction of RSRP measurement accuracy requirement for DRS based measurement Ecat clarification for iRAT CR for TS36.133 on Cell phase accuracy for Dual	12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0	12.6.0 12.6.0 12.6.0 12.6.0 12.6.0 12.6.0
12-2014 12-2014 12-2014 12-2014 12-2014 12-2014 12-2014 12-2014	RP-66 RP-66 RP-66 RP-66 RP-66 RP-66 RP-66 RP-66	RP-142162 RP-142162 RP-142162 RP-142143 RP-142144 RP-142188 RP-142179 RP-142188 RP-142180	2677 2678 2679 2682 2686 2687 2688 2690 2694	1 - 1 1	E-UTRAN TDD RSTD Measurement Reporting Test Case for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 20MHz+10MHz Introducing positioning enhancement requirement for UE Rx-Tx accuracy Correction on CA test cases in R12 Correction on E-UTRAN TDD – Non-Contention Based Random Access Test For Scell Introduction of RSRP measurement accuracy requirement for DRS based measurement Ecat clarification for iRAT CR for TS36.133 on Cell phase accuracy for Dual Connectivity	12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0	12.6.0 12.6.0 12.6.0 12.6.0 12.6.0 12.6.0 12.6.0
12-2014 12-2014 12-2014 12-2014 12-2014 12-2014 12-2014	RP-66 RP-66 RP-66 RP-66 RP-66 RP-66 RP-66	RP-142162 RP-142162 RP-142162 RP-142143 RP-142144 RP-142188 RP-142179 RP-142188	2677 2678 2679 2682 2686 2687 2688	1 - 1 - 1 - 1 1	E-UTRAN TDD RSTD Measurement Reporting Test Case for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 20MHz+10MHz Introducing positioning enhancement requirement for UE Rx-Tx accuracy Correction on CA test cases in R12 Correction on E-UTRAN TDD – Non-Contention Based Random Access Test For Scell Introduction of RSRP measurement accuracy requirement for DRS based measurement Ecat clarification for iRAT CR for TS36.133 on Cell phase accuracy for Dual	12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0	12.6.0 12.6.0 12.6.0 12.6.0 12.6.0 12.6.0
12-2014 12-2014 12-2014 12-2014 12-2014 12-2014 12-2014 12-2014 12-2014 12-2014	RP-66 RP-66 RP-66 RP-66 RP-66 RP-66 RP-66 RP-66 RP-66	RP-142162 RP-142162 RP-142162 RP-142143 RP-142144 RP-142188 RP-142179 RP-142180 RP-142180 RP-142180	2677 2678 2679 2682 2686 2687 2688 2690 2694 2695 2696	- 1 - 1 - - 1	E-UTRAN TDD RSTD Measurement Reporting Test Case for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 20MHz+10MHz Introducing positioning enhancement requirement for UE Rx-Tx accuracy Correction on CA test cases in R12 Correction on E-UTRAN TDD – Non-Contention Based Random Access Test For Scell Introduction of RSRP measurement accuracy requirement for DRS based measurement Ecat clarification for iRAT CR for TS36.133 on Cell phase accuracy for Dual Connectivity Introduction of RRM requirements for Dual Connectivity Introduction of measurement requirements for Dual Connectivity	12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0	12.6.0 12.6.0 12.6.0 12.6.0 12.6.0 12.6.0 12.6.0 12.6.0 12.6.0
12-2014 12-2014 12-2014 12-2014 12-2014 12-2014 12-2014 12-2014 12-2014 12-2014 12-2014 12-2014	RP-66 RP-66 RP-66 RP-66 RP-66 RP-66 RP-66 RP-66 RP-66 RP-66 RP-66	RP-142162 RP-142162 RP-142162 RP-142143 RP-142144 RP-142188 RP-142179 RP-142180 RP-142180 RP-142178	2677 2678 2679 2682 2686 2687 2688 2690 2694 2695 2696	- 1 - 1 - - 1	E-UTRAN TDD RSTD Measurement Reporting Test Case for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 20MHz+10MHz Introducing positioning enhancement requirement for UE Rx-Tx accuracy Correction on CA test cases in R12 Correction on E-UTRAN TDD – Non-Contention Based Random Access Test For Scell Introduction of RSRP measurement accuracy requirement for DRS based measurement Ecat clarification for iRAT CR for TS36.133 on Cell phase accuracy for Dual Connectivity Introduction of RRM requirements for Dual Connectivity Introduction of measurement requirements for Dual Connectivity Measurement and reporting of BLER in section 9	12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0	12.6.0 12.6.0 12.6.0 12.6.0 12.6.0 12.6.0 12.6.0 12.6.0 12.6.0
12-2014 12-2014 12-2014 12-2014 12-2014 12-2014 12-2014 12-2014 12-2014 12-2014	RP-66 RP-66 RP-66 RP-66 RP-66 RP-66 RP-66 RP-66 RP-66	RP-142162 RP-142162 RP-142162 RP-142143 RP-142144 RP-142188 RP-142179 RP-142180 RP-142180 RP-142180	2677 2678 2679 2682 2686 2687 2688 2690 2694 2695 2696	1 - 1 - - 1 1 -	E-UTRAN TDD RSTD Measurement Reporting Test Case for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz TDD RSRP for E-UTRAN Carrier Aggregation for 20MHz+10MHz E-UTRAN TDD RSTD Measurement Accuracy in Carrier Aggregation for 20MHz+10MHz Introducing positioning enhancement requirement for UE Rx-Tx accuracy Correction on CA test cases in R12 Correction on E-UTRAN TDD – Non-Contention Based Random Access Test For Scell Introduction of RSRP measurement accuracy requirement for DRS based measurement Ecat clarification for iRAT CR for TS36.133 on Cell phase accuracy for Dual Connectivity Introduction of RRM requirements for Dual Connectivity Introduction of measurement requirements for Dual Connectivity	12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0 12.5.0	12.6.0 12.6.0 12.6.0 12.6.0 12.6.0 12.6.0 12.6.0 12.6.0

12-2014	RP-66	RP-142158	2708	1	UE Behaviour after Measurement Gap in CA	12.5.0	12.6.0
12-2014	RP-66	RP-142177	2709	1	CA RRM Testing for Multiple Duplex Modes	12.5.0	12.6.0
12-2014 12-2014	RP-66 RP-66	RP-142177 RP-142188	2710 2712	1	CA RRM Testing for Fall back CA Configuration Introduction of High Doppler measurement accuracy	12.5.0 12.5.0	12.6.0 12.6.0
12-2014	RP-66	RP-142172	2714	1	requierments Requirements for increased carrier monitoring for idle mode	12.5.0	12.6.0
12-2014	RP-66	RP-142172	2715	1	36.133 Requirements for increased carrier monitoring in RRC	12.5.0	12.6.0
					connected state 36.133		
12-2014	RP-66	RP-142161	2716	1	Different TDD configurations in CA	12.5.0	12.6.0
12-2014	RP-66	RP-142178	2722	1	MBMS requirements in section 9	12.5.0	12.6.0
12-2014	RP-66	RP-142179	2725	1	Intra-frequency and inter-frequency measurement accuracy requirements with DMTC	12.5.0	12.6.0
12-2014	RP-66	RP-142188	2727	-	RSTD accuracy requirements for smaller and larger bandwidths	12.5.0	12.6.0
12-2014	RP-66	RP-142149	2736	-	Corrections to E-UTRAN TDD RLM In-sync under Time Domain Measurement Resource Restriction with CRS assistance information	12.5.0	12.6.0
12-2014	RP-66	RP-142149	2738	-	Corrections to E-UTRAN TDD RLM Out-of-sync under Time Domain Measurement Resource Restriction with CRS Assistance Information	12.5.0	12.6.0
12-2014	RP-66	RP-142149	2740	-	Test case for inter-RAT HO to multicarrier UTRA	12.5.0	12.6.0
12-2014	RP-66	RP-142178	2741	-	CR on parallel reporting criteria for eMBMS	12.5.0	12.6.0
12-2014	RP-66	RP-142186	2742	-	Introduction of 2UL non-contiguous intra-band CA	12.5.0	12.6.0
12-2014	RP-66	RP-142021	2743 2745	-	Introduction of 2UL inter-band CA	12.5.0	12.6.0
12-2014	RP-66	RP-142150			Requirements for multicarrier handover from EUTRA to UTRA	12.5.0	12.6.0
03-2015	RP-77	RP-150387	2747	-	CR to Correct Implementation Error in FDD RSTD Measurement Reporting Delay Test Case and to Update Io Levels for Certain RSTD Test Cases	12.6.0	12.7.0
03-2015	RP-77	RP-150382	2750	-	Remove incorrect note from CA RSTD Accuracy tests	12.6.0	12.7.0
03-2015	RP-77	RP-150387	2751	-	Change Nprs value for 5MHz CA RSTD Accuracy tests	12.6.0	12.7.0
03-2015	RP-77	RP-150066	2754	1	Maximum allowed layers for multiple monitoring for CA	12.6.0	12.7.0
03-2015	RP-77	RP-150387	2756	-	DRX correction for interruption with dual connectivity	12.6.0	12.7.0
03-2015	RP-77	RP-150388	2757	-	Correction of Interruptions with RSTD Measurements for 3DL CA	12.6.0	12.7.0
03-2015	RP-77	RP-150387	2761	1	RRM requirements for ProSe	12.6.0	12.7.0
03-2015 03-2015	RP-77 RP-77	RP-150396 RP-150394	2763 2764	1	Updating the requirements applicability for TDD config 0 Cleanup for RSRQ measurement requirement for SCE	12.6.0 12.6.0	12.7.0 12.7.0
03-2015	RP-77	RP-150394 RP-150394	2764	1	Clean up the correction on discovery signal measurements	12.6.0	12.7.0
03-2015	RP-77	RP-150387	2775	1	Correction on MBSFN measurements	12.6.0	12.7.0
03-2015	RP-77	RP-150394	2776	-	Introduce CA measurement accuracy requirements for SCE	12.6.0	12.7.0
03-2015	RP-77	RP-150382	2777	-	Correction on lo in carrier aggregation test cases	12.6.0	12.7.0
03-2015	RP-77	RP-150387	2783	-	Introducing accuracy requirement for new RSRQ	12.6.0	12.7.0
03-2015	RP-77	RP-150384	2785	-	Time-domain measurement resource restriction pattern for serving cell in felCIC RSRP and RSRQ test cases	12.6.0	12.7.0
03-2015	RP-77	RP-150384	2791	-	CR on typo of referencing section name in CA measurements	12.6.0	12.7.0
03-2015	RP-77	RP-150393	2797	1	Clarification including PSCell in Note 1 for Ecat	12.6.0	12.7.0
03-2015	RP-77	RP-150386	2798	1	Clarification of IncMon requirements for E-UTRA idle state	12.6.0	12.7.0
03-2015	RP-77	RP-150386	2799	1	Clarification of IncMon requirements for E-UTRA connected state	12.6.0	12.7.0
03-2015	RP-77	RP-150386	2800	1	Clarification concerning IncMon scaling for non-gap-assisted measurements	12.6.0	12.7.0
03-2015	RP-77	RP-150382	2803	-	Correction of RMC and OCNG pattern in event triggered tests without measurement gap	12.6.0	12.7.0
03-2015	RP-77	RP-150394	2804	-	CR on RSRQ requirements for CRS based discovery signal	12.6.0	12.7.0
03-2015	RP-77	RP-150387	2808	-	Correction to RRM test cases	12.6.0	12.7.0
03-2015	RP-77	RP-150388	2809	-	Correction to CA Testing with Different CA Configurations	12.6.0	12.7.0
03-2015	RP-77	RP-150393	2811	-	Principle to test synchronous and asynchronous DC requirements	12.6.0	12.7.0
03-2015	RP-77	RP-150387	2814	-	Further revision of RSRP requirement for 36.133 release 12	12.6.0	12.7.0
03-2015	RP-77	RP-150387	2815	-	Additional bandwidths for EUTRAN activation and deactivation of known and unknown SCell in non-DRX	12.6.0	12.7.0
03-2015	RP-77	RP-150387	2816	1	High Doppler measurement accuracy requirements	12.6.0	12.7.0
03-2015	RP-77	RP-150384	2817	1	36.133 CR to change CPICH Ec/No to CPICH Ec/Io in EUTRA FDD to UTRA FDD HO test cases	12.6.0	12.7.0
03-2015	RP-77	RP-150388	2822	-	Maximum Transmission Timing Difference in 3DL CA	12.6.0	12.7.0
03-2015	RP-77	RP-150053	2824	-	Correction to the implementation of CR 2471r3 (Clarification for ACK/NACK feedback of CGI measurement)	12.6.0	12.7.0
06-2015	RP-68	RP-150972	2825		3 DL CA Phase I tests # 1-2: Event triggered reporting tests with deactivated SCells in non-DRX for TDD-FDD CA	12.7.0	12.8.0
06-2015	RP-68	RP-150961	2828		RMC for 10 MHz for UE category 0 RRM tests	12.7.0	12.8.0

06-2015	RP-68	RP-150957	2829		Correction to measurement scaling factor for incmon	12.7.0	12.8.0
06-2015	RP-68	RP-150957	2832		RSRP requierment for SCE	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2833 r1	1	CR on FDD-FDD inter-frequency absolute and relative CRS RSRP accuracy test case	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2834 r1	1	CR on TDD-TDD inter-frequency absolute and relative CRS RSRP accuracy test case	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2835 r1	1	CR on FDD absolute and relative CSI-RSRP accuracy test case for E-UTRAN Carrier Aggregation	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2836 r1	1	CR on TDD absolute and relative CSI-RSRP accuracy test case for E-UTRAN Carrier Aggregation	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2837 r1	1	CR on FDD-FDD inter-frequency absolute and relative CSI- RSRP accuracy test case	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2838 r1	1	CR on TDD-TDD inter-frequency absolute and relative CSI- RSRP accuracy test case	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2839 r1	1	CR on FDD intra frequency absolute and relative CSI-RSRP accuracy test case	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2840 r1	1	CR on TDD intra frequency absolute and relative CSI-RSRP accuracy test case	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2842 r1	1	Intra-frequency absolute and relative RSRP accuracies in CRS based discovery signal	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2843 r1	1	Absolute and relative RSRP accuracies for E-UTRAN Carrier Aggregation in CRS based discovery signal	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2845 r1	1	SCE FDD intra-frequency absolute RSRQ accuracy	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2846 r1	1	SCE TDD intra-frequency absolute RSRQ accuracy	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2847		SCE FDD absolute RSRQ accuracy for CA	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2848		SCE TDD absolute RSRQ accuracy for CA	12.7.0	12.8.0
06-2015	RP-68	RP-150961	2849 r1	1	Test for CGI acqusition requirements for UE category 0	12.7.0	12.8.0
06-2015	RP-68	RP-150961	2850 r1	1	Test for cell identification for UE category 0	12.7.0	12.8.0
06-2015	RP-68	RP-150961	2851		Test for handover requirements for UE category 0	12.7.0	12.8.0
06-2015	RP-68	RP-150961	2852		Test for RRC re-establishment requirements for UE category 0	12.7.0	12.8.0
06-2015	RP-68	RP-150961	2853 r1	1	HD-FDD handover requirements for UE category 0	12.7.0	12.8.0
06-2015	RP-68	RP-150957	2855 r1	1	Correction of requirements for ProSe in DRX	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2857 r1	1	E-UTRAN FDD intra frequency CRS based discovery signal measurements when DRX is used	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2858 r1	1	E-UTRAN TDD intra frequency CRS based discovery signal measurements when DRX is used	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2859 r1	1	E-UTRAN FDD-FDD inter-frequency event triggered reporting under fading propagation conditions in DRX based on CRS based discovery signal	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2860 r1	1	E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation conditions in DRX based on CRS based discovery signal	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2861 r1	1	E-UTRAN FDD event triggered reporting under deactivated SCell in non-DRX based on CRS based discovery signal	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2862 r1	1	E-UTRAN TDD event triggered reporting under deactivated SCell in non-DRX based on CRS based discovery signal	12.7.0	12.8.0
06-2015	RP-68	RP-150961	2866 r1	1	RSRP accuracy FD-FDD Intra frequency case for UE category 0	12.7.0	12.8.0
06-2015	RP-68	RP-150961	2867 r1	1	RSRP accuracy HD-FDD Intra frequency case for UE category 0	12.7.0	12.8.0
06-2015	RP-68	RP-150961	2868 r1	1	RSRP accuracy TDD Intra frequency case for UE category 0	12.7.0	12.8.0
06-2015	RP-68	RP-150961	2869 r1	1	RSRQ accuracy FD-FDD Intra frequency case for UE category 0	12.7.0	12.8.0
06-2015	RP-68	RP-150961	2870 r1	1	RSRQ accuracy HD-FDD Intra frequency case for UE category 0	12.7.0	12.8.0
06-2015	RP-68	RP-150961	2871 r1	1	RSRQ accuracy TDD Intra frequency case for UE category 0	12.7.0	12.8.0
06-2015	RP-68	RP-150972	2872 r1	1	Test case for 3DL CA: PCell in FDD: Event triggered reporting on deactivated SCells and interruption probability (0.5%) without DRX (TDD-FDD CA)	12.7.0	12.8.0
06-2015	RP-68	RP-150972	2873 r1	1	Test case for 3DL CA: PCell in TDD: Event triggered reporting on deactivated SCells and interruption probability (0.5%) without DRX (TDD-FDD CA)	12.7.0	12.8.0
06-2015	RP-68	RP-150958	2874 r1	1	Test case for 3DL CA: Event triggered reporting on deactivated SCells and interruption probability (0.5%) without DRX (FDD CA)	12.7.0	12.8.0

06-2015	RP-68	RP-150968	2875 r1	1	Test case for 3DL CA: Event triggered reporting on deactivated SCells and interruption probability (0.5%) without DRX (TDD 3 DL CA)	12.7.0	12.8.0
06-2015	RP-68	RP-150965	2880		OTDOA RSTD Measurements on different secondary component carriers	12.7.0	12.8.0
06-2015	RP-68	RP-150955	2884		E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation conditions in synchronous cells for 20 MHz +20 MHz bandwidth R12	12.7.0	12.8.0
06-2015	RP-68	RP-150958	2885		E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation conditions in synchronous cells for 20 MHz +10 MHz bandwidth R12	12.7.0	12.8.0
06-2015	RP-68	RP-150955	2886		E-UTRAN TDD with 20 MHz +20 MHz bandwidth to UTRAN TDD cell search under fading propagation conditions R12	12.7.0	12.8.0
06-2015	RP-68	RP-150958	2887		E-UTRAN TDD with 20 MHz +10 MHz bandwidth to UTRAN TDD cell search under fading propagation conditions R12	12.7.0	12.8.0
06-2015	RP-68	RP-150957	2897		Further clarification of MBMSBLER reporting in section 9	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2903 r1	1	Test case of FDD-FDD inter-frequency RSRQ measurement accuracy in discovery signal occasions	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2904		CR on side conditions for inter-frequency measurement for SCE	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2905		CR on test case for RSRQ TDD-TDD inter frequency measurement accuracy requirement for SCE	12.7.0	12.8.0
06-2015	RP-68	RP-150955	2906 r1	1	Maximum Rx difference between Pcell and Scell in section 7.9	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2908 r1	1	FDD-FDD intra frequency event triggered reporting in DRX based on CSI-RS based discovery signal	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2909 r1	1	TDD-TDD intra frequency event triggered reporting in DRX based on CSI-RS based discovery signal	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2910 r1	1	FDD-FDD inter frequency event triggered reporting in DRX based on CSI-RS based discovery signal	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2911 r1	1	TDD-TDD inter frequency event triggered reporting in DRX based on CSI-RS based discovery signal	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2912 r1	1	FDD event triggered reporting under deactivated SCell in non-DRX based on CSI-RS based discovery signal	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2913 r1	1	TDD event triggered reporting under deactivated SCell in non-DRX based on CSI-RS based discovery signal	12.7.0	12.8.0
06-2015	RP-68	RP-150957	2915 r2	2	CR of DC interruption requirements	12.7.0	12.8.0
06-2015	RP-68	RP-150965	2916 r1	1	Event triggered reporting on deactivated SCells in non-DRX (FDD CA)	12.7.0	12.8.0
06-2015	RP-68	RP-150965	2917 r1	1	Event triggered reporting on deactivated SCells in non-DRX (TDD CA)	12.7.0	12.8.0
06-2015	RP-68	RP-150972	2919 r1	1	Introduction of RRM test case for E-UTRAN TDD-FDD 3 DL CA activation and deactivation of known SCell in non-DRX with PCell in FDD	12.7.0	12.8.0
06-2015	RP-68	RP-150972	2920 r1	1	Introduction of RRM test case for E-UTRAN TDD-FDD 3 DL CA activation and deactivation of known SCell in non-DRX with PCell in TDD	12.7.0	12.8.0
06-2015	RP-68	RP-150972	2921		3DL CA Phase I tests #11_3DL FDD CA SCell activation and deactivation for known SCells without DRX	12.7.0	12.8.0
06-2015	RP-68	RP-150965	2921 a		Correction of implementation of CR 2644 in Table A.9.8.1.1-1	12.7.0	12.8.0
06-2015	RP-68	RP-150972	2922		3DL CA Phase I tests #12_3DL TDD CA SCell activation and deactivation for known SCells without DRX	12.7.0	12.8.0
06-2015	RP-68	RP-150959	2922 ar2	2	Incmon CR for FDD-FDD Interfrequency correct reporting of measurement events without reduced performance group configured, non DRX	12.7.0	12.8.0
06-2015	RP-68	RP-150959	2923 r2	2	Incmon CR for TDD-TDD Interfrequency correct reporting of measurement events without reduced performance group configured, non DRX	12.7.0	12.8.0
06-2015	RP-68	RP-150963	2928 r1	1	FDD RLM Test Case for Out-of-sync in DRX for PSCell in asynchronous DC	12.7.0	12.8.0
06-2015	RP-68	RP-150963	2929 r1	1	FDD RLM Test Case for In-sync in DRX for PSCell in asynchronous DC	12.7.0	12.8.0
06-2015	RP-68	RP-150954	2932		Correction of Cell Time offset in RSTD CA Test cases (Rel- 12)	12.7.0	12.8.0
06-2015	RP-68	RP-150963	2933 r1	1	Introduction of DC intra-frequency event triggered reporting with DRX in synchronous FDD DC	12.7.0	12.8.0
06-2015	RP-68	RP-150963	2934 r1	1	Introduction of DC intra-frequency event triggered reporting with DRX in synchronous TDD DC	12.7.0	12.8.0
06-2015	RP-68	RP-150963	2935 r1	1	Introduction of DC intra-frequency event triggered reporting with DRX in asynchronous FDD DC	12.7.0	12.8.0
06-2015	RP-68	RP-150963	2936 r1	1	Introduction of DC inter-frequency event triggered reporting with DRX in synchronous FDD DC	12.7.0	12.8.0

06-2015	RP-68	RP-150963	2937	1	Introduction of DC inter-frequency event triggered reporting	12.7.0	12.8.0
			r1		with DRX in synchronous TDD DC		
06-2015	RP-68	RP-150959	2938 r1	1	Testcases for E-UTRA Incmon idle interfrequency reselection	12.7.0	12.8.0
06-2015	RP-68	RP-150962	2940 r2	2	CR on minimum number of subframes for discovery-based measurements	12.7.0	12.8.0
06-2015	RP-68	RP-150961	2941 r1	1	E-UTRAN FD-FDD Radio Link Monitoring Tests for UE category 0	12.7.0	12.8.0
06-2015	RP-68	RP-150961	2942 r1	1	E-UTRAN HD-FDD Radio Link Monitoring Tests for UE category 0	12.7.0	12.8.0
06-2015	RP-68	RP-150961	2943 r1	1	E-UTRAN TDD Radio Link Monitoring Tests for UE category	12.7.0	12.8.0
06-2015	RP-68	RP-150958	2944 r1	1	Absolute and relative RSRP accuracies in FDD 3 DL CA	12.7.0	12.8.0
06-2015	RP-68	RP-150968	2945 r1	1	Absolute and relative RSRP accuracies in TDD 3 DL CA	12.7.0	12.8.0
06-2015	RP-68	RP-150972	2946 r1	1	PCell in FDD: absolute and relative RSRQ accuracies in TDD-FDD 3 DL CA	12.7.0	12.8.0
06-2015	RP-68	RP-150972	2947 r1	1	PCell in TDD: absolute and relative RSRQ accuracies in TDD-FDD 3 DL CA	12.7.0	12.8.0
06-2015	RP-68	RP-150959	2950		FDD-FDD Interfrequency correct reporting of measurement events with reduced performance group configured for non	12.7.0	12.8.0
					DRX IncMon		
06-2015	RP-68	RP-150959	2951		TDD-TDD Interfrequency correct reporting of measurement events with reduced performance group configured for non	12.7.0	12.8.0
06-2015	RP-68	RP-150963	2952	1	DRX IncMon E-UTRAN FDD Radio Link Monitoring Test for In-sync in	12.7.0	12.8.0
			r1		DRX for PSCell in synchronous dual connectivity		
06-2015	RP-68	RP-150963	2953 r1	1	E-UTRAN TDD Radio Link Monitoring Test for In-sync in DRX for PSCell in synchronous dual connectivity	12.7.0	12.8.0
06-2015	RP-68	RP-150961	2954 r1	1	E-UTRAN FDD PCell interruption at transitions between active and non-active when DRX is used in PSCell in	12.7.0	12.8.0
					asynchronous dual connectivity		
06-2015	RP-68	RP-150958	2955		E-UTRAN TDD - UE Transmit Timing Accuracy Tests for SCell for 20 MHz +10 MHz bandwidth R12	12.7.0	12.8.0
06-2015	RP-68	RP-150955	2956		E-UTRAN TDD - UE Transmit Timing Accuracy Tests for SCell in sTAG for 20 MHz +20 MHz bandwidth R12	12.7.0	12.8.0
06-2015	RP-68	RP-150958	2957		E-UTRAN TDD - UE Transmit Timing Accuracy Tests for SCell in sTAG for 20 MHz +10 MHz bandwidth R12	12.7.0	12.8.0
06-2015	RP-68	RP-150955	2958		E-UTRAN TDD – UE Timing Advance Adjustment Accuracy Test for Scell in sTAG for 20 MHz +20 MHz bandwidth R12	12.7.0	12.8.0
06-2015	RP-68	RP-150958	2959		E-UTRAN TDD – UE Timing Advance Adjustment Accuracy Test for Scell in sTAG for 20 MHz +10 MHz bandwidth R12	12.7.0	12.8.0
06-2015	RP-68	RP-150965	2962		Addition PDSCH RMC for 5MHz with user data	12.7.0	12.8.0
06-2015	RP-68	RP-150972	2967 r1	1	3 DL CA Phase II tests # 1-2: RSRP measurement accuracies for TDD-FDD CA	12.7.0	12.8.0
06-2015	RP-68	RP-150963	2971	1	PSCell Add and Release Delay Tests for Synchronous DC	12.7.0	12.8.0
06-2015	RP-68	RP-150963	r1 2972	1	PSCell Add and Release Delay Tests for Asynchronous DC	12.7.0	12.8.0
06-2015	RP-68	RP-150959	r1 2975	1	Idle mode FDD to UTRA FDD interRAT reselection	12.7.0	12.8.0
06-2015	RP-68	RP-150959	r1 2976	1	Idle mode TDD to UTRA FDD interRAT reselection	12.7.0	12.8.0
06-2015	RP-68	RP-150959	r1 2977		E-UTRA FDD InterRAT UTRA FDD correct reporting of	12.7.0	12.8.0
					measurement events with reduced performance group configured, non DRX		
06-2015	RP-68	RP-150959	2978		E-UTRA TDD InterRAT UTRA FDD correct reporting of measurement events with reduced performance group	12.7.0	12.8.0
06-2015	RP-68	RP-150963	2979	1	configured, non DRX E-UTRAN FDD PCell interruption at transitions between	12.7.0	12.8.0
			r1		active and non-active when DRX is used in PSCell in synchronous dual connectivity		<u> </u>
06-2015	RP-68	RP-150963	2980 r1	1	E-UTRAN TDD PCell interruption at transitions between active and non-active when DRX is used in PSCell in synchronous dual connectivity	12.7.0	12.8.0
06-2015	RP-68	RP-150963	2981 r1	1	E-UTRAN FDD inter-frequency event triggered reporting in asynchronous dual connectivity	12.7.0	12.8.0
06-2015	RP-68	RP-150958	2984 r1	1	Modification for interruption period for SCell (de-)activation with 3DL	12.7.0	12.8.0
06-2015	RP-68	RP-150959	2987 r1	1	Test cases of Idle mode E-UTRA to UTRA TDD interRAT cell reselection for IncMon	12.7.0	12.8.0
			2988	1	Test cases of Interfrequency correct reporting of	12.7.0	12.8.0

		1			configured, DRX	1	1
06-2015	RP-68	RP-150963	2989	2	E-UTRAN FDD Radio Link Monitoring Test for Out-of-sync in	12.7.0	12.8.0
00 2010	111 00	111 100000	r2	_	DRX for PSCell in synchronous dual connectivity	12.7.0	12.0.0
06-2015	RP-68	RP-150963	2990	2	E-UTRAN TDD Radio Link Monitoring Test for Out-of-sync in	12.7.0	12.8.0
			r2		DRX for PSCell in synchronous dual connectivity		
06-2015	RP-68	RP-150957	2992		CR on interruption during D2D discovery for D2D single RF	12.7.0	12.8.0
06-2015	RP-68	RP-150965	2993		chain CR on E-UTRAN TDD-TDD inter frequency measurements	12.7.0	12.8.0
06-2015	RP-68	RP-150965	2993		when DRX is used	12.7.0	12.8.0
06-2015	RP-68	RP-150965	2998		Test case of FDD-FDD inter-frequency new RSRQ	12.7.0	12.8.0
					measurement accuracy		
06-2015	RP-68	RP-150965	2999		Test case of TDD-TDD inter-frequency new RSRQ	12.7.0	12.8.0
					measurement accuracy		
06-2015	RP-68	RP-150955	3001		Correction to felCIC cell configurations in RLM	12.7.0	12.8.0
06-2015	RP-68	RP-150955	3003	1	Correction to A.8.1.8	12.7.0	12.8.0
06-2015	RP-68	RP-150972	3004 r1	1	CR on absolute and relative RSRQ accuracies in TDD 3DL CA	12.7.0	12.8.0
06-2015	RP-68	RP-150972	3005	1	CR on absolute and relative RSRQ accuracies in FDD 3DL	12.7.0	12.8.0
00 2010	111 00	141 100012	r1		CA	12.7.0	12.0.0
06-2015	RP-68	RP-150965	3006		CR for test case of new RSRQ measurement accuracy in	12.7.0	12.8.0
					FDD		
06-2015	RP-68	RP-150965	3007		CR for test case of new RSRQ measurement accuracy in	12.7.0	12.8.0
06-2015	DD 00	DD 450070	2000	1	RSTD measurement reporting in FDD 3 DL CA	40.70	12.8.0
06-2015	RP-68	RP-150972	3008 r1	1	RSTD measurement reporting in FDD 3 DL CA	12.7.0	12.8.0
06-2015	RP-68	RP-150972	3009	1	RSTD measurement reporting in TDD 3 DL CA	12.7.0	12.8.0
			r1				
06-2015	RP-68	RP-150972	3010	1	RSTD measurement accuracy in FDD 3 DL CA	12.7.0	12.8.0
			r1				
06-2015	RP-68	RP-150972	3011	1	RSTD measurement accuracy in TDD 3 DL CA	12.7.0	12.8.0
06-2015	RP-68	RP-150964	r1 3012	2	Clarification of ProSe requirements in ONC	12.7.0	12.8.0
00-2013	KF-00	KF-130904	r2	2	Claimcation of Frose requirements in ONC	12.7.0	12.0.0
06-2015	RP-68	RP-150957	3013		Correction to Asynchronous Requirements for DC for only	12.7.0	12.8.0
					FDD-FDD		
06-2015	RP-68	RP-150959	3014		E-UTRA TDD InterRAT UTRA TDD correct reporting of	12.7.0	12.8.0
					measurement events with reduced performance group		
06-2015	RP-68	RP-150959	3015		configured non DRX IncMon E-UTRA FDD InterRAT UTRA TDD correct reporting of	12.7.0	12.8.0
06-2015	KF-00	KF-150959	3013		measurement events with reduced performance group	12.7.0	12.6.0
					configured non DRX for IncMon		
06-2015	RP-68	RP-150958	3016		Correction to E-UTRA TDD event triggered reporting under	12.7.0	12.8.0
					deactivated SCell in non-DRX for 20 MHz + 10 MHz		
06-2015	RP-68	RP-150969 RP-150974	2893		Carrier aggragation test cases for band 31	12.8.0	13.0.0
06-2015	RP-68	RP-150974	2966		4DL CA RRM requirements for "UE Measurements Procedures in RRC_CONNECTED State"	12.8.0	13.0.0
06-2015	RP-68	RP-150974	2970	1	RRM Requirements in Section 7 for 4 DL CA	12.8.0	13.0.0
09-2015	RP-69	RP-151475	3020	-	Correction of Ior/loc value in RRM Test case A.4.3.1.1	13.0.0	13.1.0
09-2015	RP-69	RP-151479	3022	-	Cleanup of 3DL CA RRM Test cases	13.0.0	13.1.0
09-2015	RP-69	RP-151483	3031	-	Time offset between cells	13.0.0	13.1.0
09-2015	RP-69	RP-151497	3032	-	Requirements for DC on ACK/NACK reporting for	13.0.0	13.1.0
00.0045	DD 00	DD 454475	0004		measurements using autonomous gaps	40.00	40.4.0
09-2015	RP-69	RP-151475	3034	-	Interruptions at overlapping addition/release/activation/deactivation of SCells	13.0.0	13.1.0
09-2015	RP-69	RP-151504	3035	-	RRM Requirements for 3 DL/2UL Inter-band CA	13.0.0	13.1.0
09-2015	RP-69	RP-151483	3037	-	CR on editorial corrections in TS36133 in Rel-13	13.0.0	13.1.0
09-2015	RP-69	RP-151478	3039	-	CR on item title of table in clause 8.1.2.4.5.1 in TS36133 in	13.0.0	13.1.0
					Rel-13		
09-2015	RP-69	RP-151500	3041	-	3DL CA Phase II tests #15_ SCell activation and deactivation	13.0.0	13.1.0
00.0045	DD 00	DD 454500	20.40		for unknown SCells without DRX (FDD 3 DL CA) in Rel-13	40.00	40.4.0
09-2015	RP-69	RP-151500	3043] -	3DL CA Phase II tests #16_SCell activation and deactivation for unknown SCells without DRX (TDD 3 DL CA) in Rel-13	13.0.0	13.1.0
09-2015	RP-69	RP-151475	3045	_	Modifying test case of E-UTRAN 2DL TDD CA activation of	13.0.0	13.1.0
30 2010	00	131473	0040		unknown SCell in non-DRX in Rel-13	10.0.0	10.1.0
09-2015	RP-69	RP-151480	3047	-	CR on delete note in table 8.5.2.1.6.1-1 in TS36133 in Rel-13	13.0.0	13.1.0
09-2015	RP-69	RP-151479	3052	-	Correction of inconsistency in 3 DL CA Event Triggered	13.0.0	13.1.0
					Reporting under Deactivated SCells in Non-DRX	1.5 -	15.
09-2015	RP-69	RP-151479	3054	-	CR on Interruptions at PSCell Addition/release	13.0.0	13.1.0
09-2015 09-2015	RP-69 RP-69	RP-151483 RP-151479	3062	-	Corrections to the RMC configurations in 36.133 R13 Remove the Brackets in RLM Tests for UE category 0 R13	13.0.0	13.1.0 13.1.0
09-2015	RP-69	RP-151479 RP-151474	3064 3066	1	Adding SNR values to DC RLM tests cases R13	13.0.0 13.0.0	13.1.0
09-2015	RP-69	RP-151474	3068	-	Correction on Band 31 test cases R13	13.0.0	13.1.0
09-2015	RP-69	RP-151483	3070	-	Correction to UE transmit timing accuracy tests R13	13.0.0	13.1.0

09-2015	RP-69	RP-151500	3078	-	Introduction of RRM test case for E-UTRAN TDD-FDD 3DL CA activation and deactivation of unknown SCell in non-DRX with PCell in TDD	13.0.0	13.1.0
09-2015	RP-69	RP-151483	3079	-	Modifying test case of E-UTRAN 2DL FDD CA activation of unknown SCell in non-DRX	13.0.0	13.1.0
09-2015	RP-69	RP-151500	3080	-	Introduction of RRM test case for E-UTRAN TDD-FDD 3DL CA activation and deactivation of unknown SCell in non-DRX with PCell in FDD	13.0.0	13.1.0
12-2015	RP-70	RP-152131	3086	-	Correction of RSRQ value in RRM Serving Cell Test cases A.9.9.1, A.9.9.2	13.1.0	13.2.0
12-2015	RP-70	RP-152136	3088	-	Remove brackets in RSTD measurement accuracy R13	13.1.0	13.2.0
12-2015	RP-70	RP-152133	3090	-	Remove bracket for CSI-RSRP measurement R13	13.1.0	13.2.0
12-2015	RP-70	RP-152133	3094	-	Correction to E-UTRAN TDD-FDD CA Event Triggered Reporting Under Deactivated SCell in Non-DRX with PCell in FDD R13	13.1.0	13.2.0
12-2015	RP-70	RP-152133	3096	-	Correction to E-UTRAN TDD-FDD CA Event Triggered Reporting Under Deactivated SCell in Non-DRX with PCell in TDD R13	13.1.0	13.2.0
12-2015	RP-70	RP-152133	3098	-	Correction to E-UTRAN TDD-FDD CA Event triggered reporting on deactivated SCell with PCell interruption in non-DRX with PCell in FDD R13	13.1.0	13.2.0
12-2015	RP-70	RP-152133	3100	-	Correction to E-UTRAN TDD-FDD CA Event triggered reporting on deactivated SCell with PCell interruption in non-DRX with PCell in TDD R13	13.1.0	13.2.0
12-2015	RP-70	RP-152133	3102	-	Correction to RSRP for E-UTRAN TDD-FDD Carrier Aggregation with PCell in FDD R13	13.1.0	13.2.0
12-2015	RP-70	RP-152133	3104	-	Correction to RSRP for E-UTRAN TDD-FDD Carrier Aggregation with PCell in TDD R13	13.1.0	13.2.0
12-2015	RP-70	RP-152133	3106	-	Correction to RSRQ for E-UTRAN TDD-FDD Carrier Aggregation with PCell in FDD R13	13.1.0	13.2.0
12-2015	RP-70	RP-152133	3108	-	Correction to RSRQ for E-UTRAN TDD-FDD Carrier Aggregation with PCell in TDD R13	13.1.0	13.2.0
12-2015	RP-70	RP-152136	3114	-	Alignment of UE reporting criteria requirements	13.1.0	13.2.0
12-2015	RP-70	RP-152131	3116	-	Removal of square brackets for some CA requirements	13.1.0	13.2.0
12-2015	RP-70	RP-152133	3118	-	Cleanup of 3DL CA RRM Test cases	13.1.0	13.2.0
12-2015	RP-70	RP-152134	3121	-	Correction of definition of antenna connection in some RSTD tests	13.1.0	13.2.0
12-2015	RP-70	RP-152133	3129	-	Different TDD configurations for OTDOA in CA in release 12	13.1.0	13.2.0
12-2015	RP-70	RP-152157	3131	-	Introduction of Band 67	13.1.0	13.2.0
12-2015 12-2015	RP-70 RP-70	RP-152157 RP-152133	3131 3136	-	Introduction of Band 67 Correction of definition of pTAG and psTAG	13.1.0 13.1.0	13.2.0 13.2.0
12-2015	RP-70	RP-152157	3131	-	Introduction of Band 67 Correction of definition of pTAG and psTAG Title of new section A.7.4 in TS36.133 for Rel-13 SNR levels and Reference channels for DC RLM test cases	13.1.0	13.2.0
12-2015 12-2015 12-2015 12-2015	RP-70 RP-70 RP-70 RP-70	RP-152157 RP-152133 RP-152133 RP-152133	3131 3136 3145 3146	- - -	Introduction of Band 67 Correction of definition of pTAG and psTAG Title of new section A.7.4 in TS36.133 for Rel-13 SNR levels and Reference channels for DC RLM test cases for Rel-13	13.1.0 13.1.0 13.1.0 13.1.0	13.2.0 13.2.0 13.2.0 13.2.0
12-2015 12-2015 12-2015	RP-70 RP-70 RP-70	RP-152157 RP-152133 RP-152133	3131 3136 3145		Introduction of Band 67 Correction of definition of pTAG and psTAG Title of new section A.7.4 in TS36.133 for Rel-13 SNR levels and Reference channels for DC RLM test cases	13.1.0 13.1.0 13.1.0	13.2.0 13.2.0 13.2.0
12-2015 12-2015 12-2015 12-2015	RP-70 RP-70 RP-70 RP-70	RP-152157 RP-152133 RP-152133 RP-152133	3131 3136 3145 3146 3150	- - - -	Introduction of Band 67 Correction of definition of pTAG and psTAG Title of new section A.7.4 in TS36.133 for Rel-13 SNR levels and Reference channels for DC RLM test cases for Rel-13 Correction on measurement category for reporting criteria Alignment of dB values for 2DL CA activation and	13.1.0 13.1.0 13.1.0 13.1.0	13.2.0 13.2.0 13.2.0 13.2.0
12-2015 12-2015 12-2015 12-2015 12-2015 12-2015	RP-70 RP-70 RP-70 RP-70 RP-70	RP-152157 RP-152133 RP-152133 RP-152133 RP-152131 RP-152131	3131 3136 3145 3146 3150 3167		Introduction of Band 67 Correction of definition of pTAG and psTAG Title of new section A.7.4 in TS36.133 for Rel-13 SNR levels and Reference channels for DC RLM test cases for Rel-13 Correction on measurement category for reporting criteria Alignment of dB values for 2DL CA activation and deactivation Test cases CR on editorial cleanup for D2D RRM requirements Correction to Trstd values in 3DL RSTD Measurement Accuracy test cases	13.1.0 13.1.0 13.1.0 13.1.0 13.1.0	13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0
12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015	RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70	RP-152157 RP-152133 RP-152133 RP-152133 RP-152131 RP-152133 RP-152135 RP-152136	3131 3136 3145 3146 3150 3167 3173 3178		Introduction of Band 67 Correction of definition of pTAG and psTAG Title of new section A.7.4 in TS36.133 for Rel-13 SNR levels and Reference channels for DC RLM test cases for Rel-13 Correction on measurement category for reporting criteria Alignment of dB values for 2DL CA activation and deactivation Test cases CR on editorial cleanup for D2D RRM requirements Correction to Trstd values in 3DL RSTD Measurement Accuracy test cases Update of 2DL CA activation and deactivation of unknown SCell Test cases A.8.16.19+A.8.16.20	13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0	13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0
12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015	RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70	RP-152157 RP-152133 RP-152133 RP-152133 RP-152131 RP-152133 RP-152135 RP-152136 RP-152133	3131 3136 3145 3146 3150 3167 3173 3178 3183		Introduction of Band 67 Correction of definition of pTAG and psTAG Title of new section A.7.4 in TS36.133 for Rel-13 SNR levels and Reference channels for DC RLM test cases for Rel-13 Correction on measurement category for reporting criteria Alignment of dB values for 2DL CA activation and deactivation Test cases CR on editorial cleanup for D2D RRM requirements Correction to Trstd values in 3DL RSTD Measurement Accuracy test cases Update of 2DL CA activation and deactivation of unknown SCell Test cases A.8.16.19+A.8.16.20 Update of 3DL CA activation and deactivation of unknown SCell Test cases A.8.16.41+A.8.16.42	13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0	13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0
12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015	RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70	RP-152157 RP-152133 RP-152133 RP-152131 RP-152131 RP-152135 RP-152136 RP-152133 RP-152133 RP-152133	3131 3136 3145 3146 3150 3167 3173 3178 3183 3185		Introduction of Band 67 Correction of definition of pTAG and psTAG Title of new section A.7.4 in TS36.133 for Rel-13 SNR levels and Reference channels for DC RLM test cases for Rel-13 Correction on measurement category for reporting criteria Alignment of dB values for 2DL CA activation and deactivation Test cases CR on editorial cleanup for D2D RRM requirements Correction to Trstd values in 3DL RSTD Measurement Accuracy test cases Update of 2DL CA activation and deactivation of unknown SCell Test cases A.8.16.19+A.8.16.20 Update of 3DL CA activation and deactivation of unknown SCell Test cases A.8.16.41+A.8.16.42 Update to RRM test case for E-UTRAN TDD-FDD 3DL CA activation and deactivation of unknown SCell in FDD	13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0	13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0
12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015	RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70	RP-152157 RP-152133 RP-152133 RP-152133 RP-152131 RP-152133 RP-152135 RP-152136 RP-152133	3131 3136 3145 3146 3150 3167 3173 3178 3183		Introduction of Band 67 Correction of definition of pTAG and psTAG Title of new section A.7.4 in TS36.133 for Rel-13 SNR levels and Reference channels for DC RLM test cases for Rel-13 Correction on measurement category for reporting criteria Alignment of dB values for 2DL CA activation and deactivation Test cases CR on editorial cleanup for D2D RRM requirements Correction to Trstd values in 3DL RSTD Measurement Accuracy test cases Update of 2DL CA activation and deactivation of unknown SCell Test cases A.8.16.19+A.8.16.20 Update of 3DL CA activation and deactivation of unknown SCell Test cases A.8.16.41+A.8.16.42 Update to RRM test case for E-UTRAN TDD-FDD 3DL CA activation and deactivation of unknown SCell in non-DRX	13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0	13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0
12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015	RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70	RP-152157 RP-152133 RP-152133 RP-152131 RP-152131 RP-152135 RP-152136 RP-152133 RP-152133 RP-152133 RP-152133 RP-152133	3131 3136 3145 3146 3150 3167 3173 3178 3183 3185 3187		Introduction of Band 67 Correction of definition of pTAG and psTAG Title of new section A.7.4 in TS36.133 for Rel-13 SNR levels and Reference channels for DC RLM test cases for Rel-13 Correction on measurement category for reporting criteria Alignment of dB values for 2DL CA activation and deactivation Test cases CR on editorial cleanup for D2D RRM requirements Correction to Trstd values in 3DL RSTD Measurement Accuracy test cases Update of 2DL CA activation and deactivation of unknown SCell Test cases A.8.16.19+A.8.16.20 Update of 3DL CA activation and deactivation of unknown SCell Test cases A.8.16.41+A.8.16.42 Update to RRM test case for E-UTRAN TDD-FDD 3DL CA activation and deactivation of unknown SCell in non-DRX with PCell in FDD Update to RRM test case for E-UTRAN TDD-FDD 3DL CA activation and deactivation of unknown SCell in non-DRX with PCell in TDD Correction to Cells in OTDOA assistance data in 3DL RSTD Measurement Reporting Delay test cases	13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0	13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0
12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015	RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70	RP-152157 RP-152133 RP-152133 RP-152131 RP-152131 RP-152135 RP-152136 RP-152133 RP-152133 RP-152133 RP-152133 RP-152133 RP-152133	3131 3136 3145 3146 3150 3167 3173 3178 3183 3185 3187 3189	2	Introduction of Band 67 Correction of definition of pTAG and psTAG Title of new section A.7.4 in TS36.133 for Rel-13 SNR levels and Reference channels for DC RLM test cases for Rel-13 Correction on measurement category for reporting criteria Alignment of dB values for 2DL CA activation and deactivation Test cases CR on editorial cleanup for D2D RRM requirements Correction to Trstd values in 3DL RSTD Measurement Accuracy test cases Update of 2DL CA activation and deactivation of unknown SCell Test cases A.8.16.19+A.8.16.20 Update of 3DL CA activation and deactivation of unknown SCell Test cases A.8.16.41+A.8.16.42 Update to RRM test case for E-UTRAN TDD-FDD 3DL CA activation and deactivation of unknown SCell in non-DRX with PCell in FDD Update to RRM test case for E-UTRAN TDD-FDD 3DL CA activation and deactivation of unknown SCell in non-DRX with PCell in TDD Correction to Cells in OTDOA assistance data in 3DL RSTD Measurement Reporting Delay test cases CR on RS-SINR accuracy in 36.133	13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0	13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0
12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015 12-2015	RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70 RP-70	RP-152157 RP-152133 RP-152133 RP-152133 RP-152131 RP-152135 RP-152136 RP-152133 RP-152133 RP-152133 RP-152133 RP-152133 RP-152133 RP-152133	3131 3136 3145 3146 3150 3167 3173 3178 3183 3185 3187 3189 3191 3192 3195		Introduction of Band 67 Correction of definition of pTAG and psTAG Title of new section A.7.4 in TS36.133 for Rel-13 SNR levels and Reference channels for DC RLM test cases for Rel-13 Correction on measurement category for reporting criteria Alignment of dB values for 2DL CA activation and deactivation Test cases CR on editorial cleanup for D2D RRM requirements Correction to Trstd values in 3DL RSTD Measurement Accuracy test cases Update of 2DL CA activation and deactivation of unknown SCell Test cases A.8.16.19+A.8.16.20 Update of 3DL CA activation and deactivation of unknown SCell Test cases A.8.16.41+A.8.16.42 Update to RRM test case for E-UTRAN TDD-FDD 3DL CA activation and deactivation of unknown SCell in FDD Update to RRM test case for E-UTRAN TDD-FDD 3DL CA activation and deactivation of unknown SCell in non-DRX with PCell in FDD Correction to Cells in OTDOA assistance data in 3DL RSTD Measurement Reporting Delay test cases CR on RS-SINR accuracy in 36.133 Correction on RSRQ measurement report mapping R13	13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0 13.1.0	13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0 13.2.0
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12-2015	RP-70	RP-152133	3279	-	Alignment of time when UE starts CSI reporting for activated SCell	13.1.0	13.2.0
12-2015	RP-70	RP-152135	3275	-	CR on ProSe UE transmission timing in Any Cell Selection State	13.1.0	13.2.0
12-2015	RP-70	RP-152154	3269	1	Extended DRX requirements in RRC_CONNECTED state	13.1.0	13.2.0
12-2015	RP-70	RP-152153	3268	1	RS-SINR measurement report mapping	13.1.0	13.2.0
12-2015	RP-70	RP-152153	3265	-	RS-SINR measurement requirements	13.1.0	13.2.0
					report mapping		
12-2015	RP-70	RP-152148	3263	1	LAA measurement accuracy requirements and measurement	13.1.0	13.2.0
12-2015	RP-70	RP-152148	3262	1	LAA measurement requirements	13.1.0	13.2.0
12-2015	RP-70	RP-152148	3260	1	Core RRM requirements for LAA	13.1.0	13.2.0
12-2015	RP-70	RP-152146	3256	1	Beacon RSSI Reporting Requirements	13.1.0	13.2.0
12-2015	RP-70	RP-152149	3253	2	SCell activation/deactivation delay for PUCCH SCell	13.1.0	13.2.0
12-2015	RP-70	RP-152172	3251	-	Introduction of Band 66	13.1.0	13.2.0
12-2015	RP-70	RP-152171	3250	-	Introduction of Band 65	13.1.0	13.2.0
12-2015	RP-70	RP-152163	3243	1	CR on RRM requirements for 5DL CC CA	13.1.0	13.2.0
12-2015	RP-70	RP-152152	3241	1	CR on requirements of interruption for 3 DL CC Dual connectivity	13.1.0	13.2.0
12-2015	RP-70	RP-152152	3240	1	CR on RRM requirements for 3 DL CC Dual connectivity	13.1.0	13.2.0
12-2015	RP-70	RP-152152	3239	1	CR on maximum uplink timing difference for Dual Connectivity	13.1.0	13.2.0
12-2015	RP-70	RP-152152	3238	1	CR on RRM requirements for SSTD reporting for Dual Connectivity	13.1.0	13.2.0
12-2015	RP-70	RP-152133	3237	-	Correction on A.8.16.38 3DL TDD CA activation and deactivation of known SCell in non-DRX	13.1.0	13.2.0
12-2015	RP-70	RP-152133	3235	ı	Correction on A.8.16.37 3DL FDD CA activation and deactivation of known SCell in non-DRX	13.1.0	13.2.0
12-2015	RP-70	RP-152133	3233	ı	Correction on A.8.16.36 3 DL PCell in TDD CA Activation and Deactivation of Known SCell in Non-DRX	13.1.0	13.2.0
12-2015	RP-70	RP-152133	3231	ı	Correction on A.8.16.35 3 DL PCell in FDD CA Activation and Deactivation of Known SCell in Non-DRX	13.1.0	13.2.0
12-2015	RP-70	RP-152133	3229	ļ	Correction on A.8.16.18 E-UTRAN TDD activation and deactivation of known SCell in non-DRX	13.1.0	13.2.0

History

	Document history								
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