8 UE Measurements Procedures

When the UE is in RRC_CONNECTED state on a cell, UE reports measurement information in accordance with the measurement configuration as provided by the System Simulator. To initiate a specific measurement, the System Simulator sends a 'RRC Connection Reconfiguration message' to the UE including a measurement ID and type, a command (setup, modify, release), the measurement objects, the measurement quantity, the reporting quantities and the reporting criteria (periodical/event-triggered), after that the measurement reporting process takes place. In this process when the reporting criteria are fulfilled the UE sends a 'Measurement Report message' to the System Simulator including the measurement ID and the results. The reporting criteria that trigger the UE to send a 'Measurement Report message' to the System Simulator is event-triggered as defined in TS 36.331 [5] clause 5.5.3. The measurement reporting succeeds only if the measurement report is sent within the specified measurement reporting delay period.

The reference channels in this section assume transmission of PDSCH with a maximum number of 5 HARQ transmissions unless otherwise specified. SS transmits PDSCH via PDCCH DCI format 1A for C_RNTI to transmit the DL RMC according to Annex A1. The SS sends downlink MAC padding bits on the DL RMC.

Uplink is configured according to Annex A.3.

8.1 E-UTRAN FDD intra frequency measurements

8.1.1 E-UTRAN FDD-FDD intra frequency event triggered reporting under fading propagation conditions in asynchronous cells

8.1.1.1 Test purpose

To verify the UE's ability to make a correct reporting of an event under fading propagation conditions in asynchronous cells within the E-UTRA FDD-FDD intra frequency cell search requirements.

8.1.1.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 8 and forward.

8.1.1.3 Minimum conformance requirements

The measurement reporting delay shall be less than $T_{identify\_intra}$ in RRC_CONNECTED state.

When no DRX is in use the UE shall be able to identify a new detectable FDD intra frequency cell within

$$T_{\text{identify intra}} = T_{\text{basic identify } E-UTRA\text{\_FDD, intra}} \cdot \frac{T_{\text{Measurement Period, Intra}}}{T_{\text{Intra}}} \quad ms$$

Where:

$T_{basic\_identify\_E\text{-}UTRA\_FDD,\ intra}$ is 800 ms.

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.

A cell shall be considered detectable when

- RSRP related side condition given in TS 36.133 [4] clauses 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 I.2.1 for a corresponding Band.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement\_Period\ Intra}$. 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, 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 $Y_{measurement\ intra}$ cells, where $Y_{measurement\ intra}$ is defined in the following equation. If the UE has identified more than $Y_{measurement\ intra}$ cells, the UE shall perform measurements of all identified cells but the reporting rate of RSRP and RSRQ measurements of cells from UE physical layer to higher layers may be decreased.

$$Y_{\text{measurement intra}} = Floor\left\{ X_{\text{basic measurement FDD}} \cdot \frac{T_{\text{Intra}}}{T_{\text{Measurement\_Period,Intra}}} \right\} \text{cells}$$

Where:

$X_{basic\ measurement\ FDD}$ = 8 (cells).

$T_{Measurement\_Period\ Intra}$ = 200 ms. The measurement period for intra-frequency RSRP and RSRQ measurements.

The RSRP measurement accuracy for all measured cells shall be as specified in TS 36.133 [4] clauses 9.1. .2.1 and 9.1.2.2, and the RSRQ measurement accuracy for all measured cells shall be as specified in the clause 9.1.5.1

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] clauses 9.1.2.1, 9.1.2.2, and 9.1.5.1, 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 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 $T_{identify\ intra}$ defined in TS 36.133 [4] clause 8.1.2.2.1.2. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify\_intra}$ defined in TS 36.133 [4] section 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 an additional delay can be expected. The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.2.1 and A.8.1.1.

8.1.1.4 Test description

8.1.1.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.15.

2. The general test parameter settings are set up according to Table 8.1.1.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.1.1.4.3.

5. There is one E-UTRA FDD carrier and two cells specified in the test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.1.1.4.1-1: 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.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.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.
Channel Bandwidth ($BW_{channel}$)	MHz	10	
A3-Offset	dB	-6	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used
DRX			OFF
Time offset between cells	ms	3	Asynchronous cells 3ms or 92160*Ts
T1	s	5	
T2	s	5	

8.1.1.4.2 Test procedure

The test consists of one active cell and one neighbour cell. 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 durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table 8.1.1.5-1. Propagation conditions are set according to Annex B clauses B.1.1 and B.2.2. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.1.1.5-1.

6. UE shall transmit a MeasurementReport message triggered by Event A3. If the overall delays measured from the beginning of time period T2 is less than 802 ms then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with UE-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.1.1.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.1.1.4.3-1: Common Exception messages for E-UTRAN FDD-FDD intra frequency event triggered reporting under fading propagation conditions in asynchronous cells test requirement

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-2 Table H.3.1-7

Table 8.1.1.4.3-2: *ReportConfigEUTRA-A3*: Additional E-UTRAN FDD-FDD intra frequency event triggered reporting under fading propagation conditions in asynchronous cells test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12 (-6 dB)	-6 is actual value in dB (-12 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			

Table 8.1.1.4.3-3: *MeasResults*: Additional E-UTRAN FDD-FDD intra frequency event triggered reporting under fading propagation conditions in asynchronous cells test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServiCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.1.1.4.3-4: *MeasResultListEUTRA*: Additional E-UTRAN FDD-FDD intra frequency event triggered reporting under fading propagation conditions in asynchronous cells test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
measResult SEQUENCE {			
rsrpResult		Set according to specific test INTEGER(0..97)	
rsrqResult		Set according to specific test INTEGER(0..34)	
}			
}			

8.1.1.5 Test requirement

Tables 8.1.1.4.1-1 and 8.1.1.5-1 define the primary level settings including test tolerances for E-UTRAN FDD-FDD event triggered reporting under fading propagation conditions in asynchronous cells test.

Table 8.1.1.5-1: Cell Specific Test requirement 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 Number		1		1	
$BW_{channel}$	MHz	10		10	
OCNG Patterns defined in D.1.1 (OP.1 FDD) and in D.1.2 (OP.2 FDD)		OP.1 FDD		OP.2 FDD	
PBCH_RA	dB	0		0	
PBCH_RB	dB				
PSS_RA	dB				
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				

$\hat{E}_s/I_{ot}$	dB	6.10	-0.95	-Infinity	-0.95
N_{oc} Note 3	dBm/15 KHz	-98			
$\hat{E}_s/N_{oc}$	dB	6.10	6.10	-Infinity	6.10
RSRP Note 4	dBm/15 KHz	-91.90	-91.90	-Infinity	-91.90
SCH_RP Note 4	dBm/15 KHz	-91.90	-91.90	-Infinity	-91.90
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 fulfilled. Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.					

The overall delays measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event A3 triggered measurement report to Cell 2.

The overall delays measured in the test may be up to 2xTTI$_{DCCH}$ higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify\_intra}$

$$T_{identify\_intra} = T_{basic\ identify\ E-UTRA\_FDD,\ intra} \cdot \frac{T_{Measurement\ Period,\ Intra}}{T_{Intra}}$$

$T_{basic\_identify\_E\text{-}UTRA\_FDD,\ intra}$= 800 ms

$T_{Measurement\_Period,Intra}$ = 200 ms

T_{Intra} = 200 ms

TTI insertion uncertainty = 2 ms

The overall delays measured shall be less than a total of 802 ms in this test case (note: this gives a total of 800 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.1.2 E-UTRAN FDD-FDD intra frequency event triggered reporting under fading propagation conditions in synchronous cells

8.1.2.1 Test purpose

To verify the UE's ability to make a correct reporting of an event under fading propagation conditions in synchronous cells within the E-UTRA FDD-FDD intra frequency cell search requirements.

8.1.2.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 8 and forward. Applicability requires support for FGI bit 5.

8.1.2.3 Minimum conformance requirements

The measurement reporting delay shall be less than $T_{identify\_intra}$ in RRC_CONNECTED state.

When no DRX is in use the UE shall be able to identify a new detectable FDD intra frequency cell within

$$T_{identify\ intra} = T_{basic\,identify\,E-UTRA\_FDD,\,intra} \cdot \frac{T_{Measurement\ Period,\,Intra}}{T_{Intra}} \quad ms$$

Where:

$T_{basic\_identify\_E-UTRA\_FDD,\,intra}$ is 800 ms.

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.

A cell shall be considered detectable when

- RSRP related side condition given in TS 36.133 [4] clauses 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 I.2.1 for a corresponding Band.

Identification of a cell shall include detection of the cell and additionally performing a single measurement with measurement period of $T_{Measurement\_Period\ Intra}$. 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, 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 $Y_{measurement\ intra}$ cells, where $Y_{measurement\ intra}$ is defined in the following equation. If the UE has identified more than $Y_{measurement\ intra}$ cells, the UE shall perform measurements 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.

$$Y_{measurement\ intra} = Floor\left\{ X_{basic\,measurement\,FDD} \cdot \frac{T_{Intra}}{T_{Measurement\_Period,Intra}} \right\} \text{cells}$$

Where:

$X_{basic\ measurement\ FDD}$ = 8 (cells).

$T_{Measurement\_Period\ Intra}$ = 200 ms. The measurement period for intra-frequency RSRP and RSRQ measurements.

The RSRP measurement accuracy for all measured cells shall be as specified in TS 36.133 [4] clauses 9.1.2.1 and 9.1.2.2, and the RSRQ measurement accuracy for all measured cells shall be as specified in the clause 9.1.5.1.

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] clauses 9.1.2.1, 9.1.2.2, and 9.1.5.1, 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 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 $T_{identify\ intra}$ defined in TS 36.133 [4] clause 8.1.2.2.1.2. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify\_intra}$ defined in TS 36.133 [4] section 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 an additional delay can be expected.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.2.1 and A.8.1.2.

8.1.2.4 Test description

8.1.2.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.15.
2. The general test parameter settings are set up according to Table 8.1.2.4.1-1.
3. Propagation conditions are set according to Annex B clauses B.0.
4. Message contents are defined in clause 8.1.2.4.3.
5. There is one E-UTRA FDD carrier and two cells specified in the test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.1.2.4.1-1: General Test Parameters for E-UTRAN FDD-FDD 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.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.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.
Channel Bandwidth ($BW_{channel}$)	MHz	10	
A3-Offset	dB	-6	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	ms	0	
Filter coefficient		0	L3 filtering is not used
DRX		DRX_L	As specified in Table 8.1.2.5-2
Time offset between cells	μs	3	Synchronous cells 3μs or 92*Ts
T1	s	5	
T2	s	5	

8.1.2.4.2 Test procedure

The test consists of one active cell and one neighbour cell. In the measurement control information it is indicated to the UE that event-triggered reporting with Event A3 is used. PDCCHs indicating new transmissions 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 durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table 8.1.2.5-1. Propagation conditions are set according to Annex B clauses B.1.1 and B.2.2.T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.1.2.5-1. T2 starts.

6. UE shall transmit a MeasurementReport message triggered by Event A3. If the overall delays measured from the beginning of time period T2 is less than 802 ms then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
- transmits in Cell 1 a Paging message (including PagingRecord with UE-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
or
- switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10.Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.1.2.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.1.2.4.3-1: Common Exception messages for E-UTRAN FDD-FDD intra frequency event triggered reporting under fading propagation conditions in synchronous cells test requirement

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-2 Table H.3.1-7 Table H.3.6-2

Table 8.1.2.4.3-2: *ReportConfigEUTRA-A3*: Additional E-UTRAN FDD-FDD intra frequency event triggered reporting under fading propagation conditions in synchronous cells test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12 (-6 dB)	-6 is actual value in dB (-12 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			

Table 8.1.2.4.3-3: *MeasResults*: Additional E-UTRAN FDD-FDD intra frequency event triggered reporting under fading propagation conditions in synchronous cells test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCell CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.1.2.4.3-4: *MeasResultListEUTRA*: Additional E-UTRAN FDD-FDD intra frequency event triggered reporting under fading propagation conditions in synchronous cells test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
measResult SEQUENCE {			
rsrpResult		Set according to specific test INTEGER(0..97)	
rsrqResult		Set according to specific test INTEGER(0..34)	
}			
}			

8.1.2.5 Test requirement

Tables 8.1.2.4.1-1, 8.1.2.5-1, and 8.1.2.5-2 define the primary level settings including test tolerances for E-UTRAN FDD-FDD event triggered reporting under fading propagation conditions in synchronous cells test.

Table 8.1.2.5-1: Cell Specific Test requirement Parameters for E-UTRAN FDD-FDD event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
E-UTRA RF Channel Number		1		1	
$BW_{channel}$	MHz	10		10	
OCNG Patterns defined in D.1.1 (OP.1 FDD) and in D.1.2 (OP.2 FDD)		OP.1 FDD		OP.2 FDD	
PBCH_RA	dB	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				
$\hat{E}_s/I_{ot}$	dB	6.10	-0.95	-Infinity	-0.95
N_{oc} Note 3	dBm/15 KHz	-98			
$\hat{E}_s/N_{oc}$	dB	6.10	6.10	-Infinity	6.10
RSRP Note 4	dBm/15 KHz	-91.90	-91.90	-Infinity	-91.90
SCH_RP Note 4	dBm/15 KHz	-91.90	-91.90	-Infinity	-91.90
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 fulfilled.
Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

Table 8.1.2.5-2: Reference DRX-Configuration to be used in E-UTRAN FDD-FDD event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Value	Comments
Reference configuration	DRX_L	As defined in 4.8.2.1.5 in TS 36.508 [7.]
onDurationTimer	psf6	
drx-InactivityTimer	psf1920	
drx-RetransmissionTimer	psf16	
longDRX-CycleStartOffset	sf1280, 0	
shortDRX	disabled	
Note: For further information see section 6.3.2 in 3GPP TS 36.331 [5].		

The overall delays measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event A3 triggered measurement report to Cell 2.

The overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify\_intra}$

$$T_{identify\_intra} = T_{basic\ identify\ E-UTRA\ \_\ FDD,\ intra} \cdot \frac{T_{Measuremen\ t\ Period,\ Intra}}{T_{Intra}}$$

$T_{basic\_identify\_E-UTRA\_FDD,\ intra}$ = 800 ms

$T_{Measurement\_Period,Intra}$ = 200 ms

T_{Intra} = 200 ms

TTI insertion uncertainty = 2 ms

The overall delays measured shall be less than a total of 802 ms in this test case (note: this gives a total of 800 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.1.3 E-UTRAN FDD-FDD intra frequency event triggered reporting under fading propagation conditions in synchronous cells with DRX

8.1.3.1 Test purpose

To verify the UE's ability to make a correct reporting of an event in DRX under fading propagation conditions in synchronous cells within the E-UTRA FDD-FDD intra frequency cell search requirements.

8.1.3.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 8 and forward. Applicability requires support for FGI bit 5.

8.1.3.3 Minimum conformance requirements

When DRX is in use the UE shall be able to identify a new detectable FDD intra frequency cell within $T_{identify\_intra}$ as defined in table 8.1.2.2.1.2-1 of TS 36.133 [4] clause 8.1.2.2.1.2.

A cell shall be considered detectable when

- RSRP related side condition given in TS 36.133 [4] clauses 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 I.2.1 for a corresponding Band.

In the RRC_CONNECTED state with DRX cycles of 80 ms or greater the measurement period for intra frequency measurements is $T_{measure\_intra}$ as defined in table 8.1.2.2.1.2-2 of TS 36.133 [4] clause 8.1.2.2.1.2. The UE shall be capable of performing RSRP and RSRQ measurement 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 $T_{measure\_intra}$.

The RSRP measurement accuracy for all measured cells shall be as specified in TS 36.133 [4] clauses 9.1.2.1 and 9.1.2.2, and the RSRQ measurement accuracy for all measured cells shall be as specified in the clause 9.1.5.1.

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] clauses 9.1.2.1, 9.1.2.2, and 9.1.5.1, 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 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 $T_{identify\_intra}$ defined in TS 36.133 [4] clause 8.1.2.2.1.2. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify\_intra}$ defined in TS 36.133 [4] section 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 an additional delay can be expected.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.2.1 and A.8.1.3.

8.1.3.4 Test description

8.1.3.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.15.

2. The general test parameter settings are set up according to Table 8.1.3.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.1.3.4.3.

5. There is one E-UTRA FDD carrier and two cells specified in the test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.1.3.4.1-1: 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.0 FDD		As specified in section A.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD		As specified in section A.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.
Channel Bandwidth ($BW_{channel}$)	MHz	10		
A3-Offset	dB	-6		
CP length		Normal		
Hysteresis	dB	0		
Time To Trigger	dB	0		
Filter coefficient		0		L3 filtering is not used
DRX		ON		DRX related parameters are defined in Table 8.1.3.5-2
Time offset between cells		3 μs		Synchronous cells 3μs or 92*Ts
T1	s	5		
T2	s	5	30	

8.1.3.4.2 Test procedure

The test consists of one active cell and one neighbour cell. 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 durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

In Test 1 when DRX = 40 ms is used, UE needs to be provided at least once every 500 ms with new Timing Advance Command MAC control element to restart the Timer Alignment Timer to keep the UE uplink time alignment. Furthermore, the UE is allocated with PUSCH resource at every DRX cycle. In Test 2 when DRX = 1280 ms is used, the uplink time alignment is not maintained and the UE needs to use RACH to obtain uplink allocation for measurement reporting.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table 8.1.3.5-1. Propagation conditions are set according to Annex B clauses B.1.1 and B.2.2. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.1.3.5-1 and 8.1.3.5-2.

6. UE shall transmit a MeasurementReport message triggered by Event A3. If the overall delays measured from the beginning of time period T2 is less than 842 ms for Test 1 or less than 26882 ms for Test 2 then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with UE-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

11. Repeat step 1-10 for each sub-test in Table 8.1.3.4.1-1 as appropriate.

8.1.3.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.1.3.4.3-1: Common Exception messages for E-UTRAN FDD-FDD intra frequency event triggered reporting in DRX under fading propagation conditions test 1 and 2 requirements

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-2 Table H.3.1-7 Table H.3.7-1 Table H.3.7-2 Table H.3.7-3

Table 8.1.3.4.3-2: *RRCConnectionReconfiguration*: Additional E-UTRAN FDD-FDD intra frequency event triggered reporting with in DRX under fading propagation conditions test 1 and 2 requirements

Derivation Path: TS 36.508 [7] clause 4.6.1, Table 4.6.1-8 RRCConnectionReconfiguration			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier-DL		
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
measConfig	MeasConfig -DEFAULT		
radioResourceConfigDedicated	RadioResourceConfigDedicated-HO		
}			
}			
}			
}			

Table 8.1.3.4.3-3: *ReportConfigEUTRA-A3*: Additional E-UTRAN FDD-FDD intra frequency event triggered reporting with in DRX under fading propagation conditions test 1 and 2 requirements

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventide CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12 (-6 dB)	-6 is actual value in dB (-12 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			

Table 8.1.3.4.3-4: *SchedulingRequest-Config-DEFAULT*: Additional E-UTRAN FDD-FDD intra-frequency event triggered reporting in DRX under fading propagation conditions test 1 and 2 requirements

Derivation Path: TS 36.508 [7] clause 4.6.3, Table 4.6.3-20 SchedulingRequest-Config-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequest-Config-DEFAULT ::= CHOICE {			
setup SEQUENCE {			
sr-PUCCH-ResourceIndex	41	10 MHz channel bandwidth parameter	
sr-ConfigIndex	0		
dsr-TransMax	n4		
}			
}			

Table 8.1.3.4.3-5: *MeasResults*: Additional E-UTRAN FDD-FDD intra frequency event triggered reporting in DRX under fading propagation conditions test 1 and 2 requirements

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.1.3.4.3-6: *MeasResultListEUTRA*: Additional E-UTRAN FDD-FDD intra frequency event triggered reporting in DRX under fading propagation conditions test 1 and 2 requirements

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultEUTRA {			
physCellId	PhysCellId		
measResult SEQUENCE {			
rsrpResult		Set according to specific test INTEGER(0..97)	
rsrqResult		Set according to specific test INTEGER(0..34)	
}			
}			

8.1.3.5 Test requirement

Tables 8.1.3.4.1-1, 8.1.3.5-1, 8.1.3.5-2 and 8.1.3.5-3 define the primary level settings including test tolerances for E-UTRAN FDD-FDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used test.

Table 8.1.3.5-1: Cell Specific Test requirement Parameters for E-UTRAN FDD-FDD intra-frequency event triggered reporting in DRX under fading propagation conditions

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
E-UTRA RF Channel Number		1		1	
$BW_{channel}$	MHz	10		10	
OCNG Patterns defined in D.1.1 (OP.1 FDD) and in D.1.2 (OP.2 FDD)		OP.1 FDD		OP.2 FDD	
PBCH_RA	dB	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				
$\hat{E}_s/I_{ot}$	dB	6.10	-0.95	-Infinity	-0.95
N_{oc} Note 2	dBm/15 KHz	-98			
$\hat{E}_s/N_{oc}$	dB	6.10	6.10	-Infinity	6.10
RSRP Note 3	dBm/15 KHz	-91.90	-91.90	-Infinity	-91.90
SCH_RP Note 3	dBm/15 KHz	-91.90	-91.90	-Infinity	-91.90
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: 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 8.1.3.5-2: DRX Configuration to be used for E-UTRAN FDD-FDD intra-frequency event triggered reporting in DRX under fading propagation conditions

Field	Test1	Test2	Comment
	Value	**Value**	
onDurationTimer	psf1	psf1	As specified in section 6.3.2 in 3GPP TS 36.331 [5]
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Table 8.1.3.5-3: TimeAlignmentTimer and sr-ConfigIndex-Configuration to be used for E-UTRAN FDD-FDD intra-frequency event triggered reporting in DRX under fading propagation conditions

Field	Test1	Test2	Comment
	Value	**Value**	

TimeAlignmentTimer	sf500	sf500	As specified in section 6.3.2 in 3GPP TS 36.331 [5]
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 [5] and section10.1 in 3GPP TS 36.213 [8].

In Test 1 when DRX cycle length = 40 ms is used, the overall delay measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event A3 triggered measurement report to Cell 2 on PUSCH.

In Test 2 when DRX cycle length = 1280 ms is used, the overall delay measured is defined as the time from the beginning of time period T2, to the moment the UE starts to send preambles on the PRACH for Scheduling Request (SR) to obtain allocation to send the measurement report to Cell 2 on PUSCH.

For both tests:

The overall delay measured may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

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.

The overall delay measured when DRX cycle length is 40 ms test requirement is expressed as:

Overall delay measured = measurement reporting delay + TTI insertion uncertainty + DRX cycle length

Measurement reporting delay = $T_{identify\_intra}$

$T_{identify\_intra}$ = 800 ms. When DRX cycle length is 40 ms then the $T_{identify\_intra}$ is 0.8 s.

TTI insertion uncertainty = 2 ms

DRX cycle length = 40 ms

The overall delay measured when DRX cycle length is 40 ms shall be less than a total of 842 ms.

The overall delay measured when DRX cycle length is 1280 ms test requirement is expressed as:

Overall delay measured = measurement reporting delay + TTI insertion uncertainty + DRX cycle length

Measurement reporting delay = $T_{identify\_intra}$

$T_{identify\_intra}$ = 25600 ms. When DRX cycle length is 1280 ms then the $T_{identify\_intra}$ is 20 x 1280 ms.

TTI insertion uncertainty = 2 ms

DRX cycle length = 1280 ms

The overall delay measured when DRX cycle length is 1280 ms shall be less than a total of 26882 ms.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.1.4 Void

8.1.5 E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

8.1.5.1 Test purpose

To verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps.

8.1.5.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 9 and forward with support of intra-frequency SI acquisition for HO.

8.1.5.3 Minimum conformance requirements

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 section 5.5.3.1 of TS 36.331 [5]. 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', the UE shall be able to identify a new CGI of E-UTRA cell within:

$$T_{\text{identify\_CGI, intra}} = T_{\text{basic\_identify\_CGI, intra}} \quad ms$$

Where

$T_{\text{basic\_identify\_CGI, intra}}$ = 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.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in TS 36.133 [4] Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex I.2.2 for a corresponding Band

The requirement for identifying a new CGI of an E-UTRA cell within $T_{\text{basic\_identify\_CGI,.intra}}$ is applicable when no DRX is used as well as when all the DRX cycles specified in 3GPP TS 36.331 [5] are used.

Given that continuous DL data allocation and no DRX is used, and no measurement gaps are configured, the UE shall have more than 60 ACK/NACKs transmitted during the identification of a new CGI of E-UTRA cell.

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.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.2.3 and A.8.1.5.

8.1.5.4 Test description

8.1.5.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.20.

2. The general test parameter settings are set up according to Table 8.1.5.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.1.5.4.3.

5. There is one E-UTRA FDD carrier and two cells specified in the test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.1.5.4.1-1: 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.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.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 section 5.5.3.1 in TS 36.331 [5].
Time offset between cells	ms	3	Asynchronous cells 3ms or 92160*Ts
T1	s	5	
T2	s	≤10	
T3	s	5	

8.1.5.4.2 Test procedure

The test comprises of one active cell and one neighbour cell. 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.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table 8.1.5.5-1. Propagation conditions are set according to Annex B clauses B.1.1. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration with event A3 configured message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.1.5.5-1.

6. UE shall transmit a MeasurementReport message triggered by Event A3.

7. SS shall transmit an RRCConnectionReconfiguration message during period T2, The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE.

8. The SS shall start T3 timer when the last TTI containing the RRC message implying SI reading is sent to UE.

9. The UE shall transmit RRCConnectionReconfigurationComplete message.

10. UE shall transmit a MeasurementReport message containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3. The UE shall be scheduled continuously throughout the test, and from the start of T3 until 170ms at least 80 ACK/NACK shall be detected as being transmitted by the UE. If the overall delays measured from the beginning of time period T3 is less than 170 ms, and the UE have more than 80 ACK/NACKs transmitted from the start of T3 until 170 ms, then the number of successful tests is increased by one. If the UE fails to report the cell global identifier within the overall delays measured requirement, or the UE have less than 80 ACK/NACKs transmitted from the start of T3 until 170 ms, then the number of failure tests is increased by one.

11. After the SS receive the MeasurementReport message in step 10) or when T3 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

12. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

13. After the RRC connection release, the SS:
    - transmits in Cell 1 a Paging message (including PagingRecord with UE-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
    or
    - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

14. Repeat step 2-13 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.1.5.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.1.5.4.3-1: Common Exception messages for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-2 Table H.3.1-7

Table 8.1.5.4.3-2: *ReportConfigEUTRA-A3*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-6 (-3 dB)	-3 is actual value in dB (-6 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			
}			

Table 8.1.5.4.3-3: *MeasResults*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step6)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.1.5.4.3-4: *MeasResultListEUTRA*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step6)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
measResult SEQUENCE {			
rsrpResult		Set according to specific test INTEGER(0..97)	
rsrqResult		Set according to specific test INTEGER(0..34)	
}			
}			

Table 8.1.5.4.3-5: *ReportConfigEUTRA-PERIODICAL*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step7)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-7 ReportConfigEUTRA-PERIODICAL			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-PERIODICAL ::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose	reportCGI		
}			
}			
reportAmount	1		
si-RequestForHO-r9	setup		
}			

Table 8.1.5.4.3-6: *MeasResultListEUTRA*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step10)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
cgi-Info SEQUENCE{			
cellGlobalId SEQUENCE{			
plmn-Identity	plmn-Identity		
cellIdentity	cellIdentity		
}			
trackingAreaCode			
plmn-IdentityList			
}			
}			

Table 8.1.5.4.3-7: *MeasObjectEUTRA-GENERIC*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-2 MeasObjectEUTRA-GENERIC			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-GENERIC(Freq) ::= SEQUENCE {			
neighCellConfig	‘00’B (Not all neighbour cells have the same MBSFN subframe allocation as serving cell)		Cell 1
	‘01’B (No MBSFN subframes are present in all neighbour cells)		Cell 2
cellForWhichToReportCGI	Physical Cell ID of Cell 2		Cell 1
}			

Table 8.1.5.4.3-8: *SystemInformationBlockType2*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement

Derivation Path: TS 36.508 [7] clause 7.2.1.3, Table 7.2.1.3-1 SystemInformationBlockType2 exceptions			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType2 ::= SEQUENCE {			
mbsfn-SubframeConfig	Not present		Cell 1
}			

Table 8.1.5.4.3-9: *SystemInformationBlockType3*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement

Derivation Path: TS 36.508 [7] clause 7.2.1.3, Table 7.2.1.3-2 SystemInformationBlockType3 exceptions			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType3 ::= SEQUENCE {			
neighCellConfig	‘00’B (Not all neighbour cells have the same MBSFN subframe allocation as serving cell)		Cell 1
	‘01’B (No MBSFN subframes are present in all neighbour cells)		Cell 2
}			

Table 8.1.5.4.3-10: *MeasConfig-DEFAULT*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step7)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1 MeasConfig-DEFAULT:			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId))OF SEQUENCE {	1 entry		
reportConfigId	idReportConfig-P		
reportConfig	ReportConfigEUTRA-PERIODICAL		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) of SEQUENCE {	1 entry		
measId	2		
measObjectId	IdMeasObject-f1		
reportConfigId	IdReportConfig-P		
}			
measGapConfig	Not present		
}			

Table 8.1.5.4.3-11: *MeasResults*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step10)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	2	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

8.1.5.5 Test requirement

Tables 8.1.5.4.1-1 and 8.1.5.5-1 define the primary level settings including test tolerances for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test.

Table 8.1.5.5-1: Cell Specific Test requirement 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 Number		1			1		
$BW_{channel}$	MHz	10			10		
OCNG Patterns defined in D.1.10 (OP.10 FDD) and in D.1.2 (OP.2 FDD)		OP.10 FDD	OP.10 FDD	OP.10 FDD	OP.2 FDD	OP.2 FDD	OP.2 FDD
PBCH_RA	dB	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						
$\hat{E}_s/I_{ot}$	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 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.

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

The overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Test requirement = RRC Procedure delay + $T_{identify\_CGI,\,intra}$ + TTI insertion uncertainty

RRC procedure delay=15ms

$$T_{identify\_CGI,\,intra} = T_{basic\_identify\_CGI,\,intra} \quad ms$$

$T_{basic\_identify\_CGI,intra}$ = 150 ms

TTI insertion uncertainty = 2 ms

The overall delays measured is 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.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

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 TS 36.133 [4] Section 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.

8.1.6 E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

8.1.6.1 Test purpose

To verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in DRX.

8.1.6.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 9 and forward with support of intra-frequency SI acquisition for HO. Applicability requires support for FGI bit 5

8.1.6.3 Minimum conformance requirements

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 section 5.5.3.1 of TS 36.331 [5]. 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', the UE shall be able to identify a new CGI of E-UTRA cell within:

$$\mathrm{T}_{\mathrm{identify\_CGI,\,intra}} = \mathrm{T}_{\mathrm{basic\_identify\_CGI,\,intra}} \quad ms$$

Where

$\mathrm{T}_{\mathrm{basic\_identify\_CGI,\,intra}}$ = 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.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in TS 36.133 [4] Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex I.2.2 for a corresponding Band

The requirement for identifying a new CGI of an E-UTRA cell within $\mathrm{T}_{\mathrm{basic\_identify\_CGI,intra}}$ is applicable when no DRX is used as well as when all the DRX cycles specified in 3GPP TS 36.331 [5] are used.

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.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.2.3 and A.8.1.6.

8.1.6.4 Test description

8.1.6.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.20.

2. The general test parameter settings are set up according to Table 8.1.6.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.1.6.4.3.

5. There is one E-UTRA FDD carrier and two cells specified in the test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.1.6.4.1-1: General test parameters for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps when DRX is used

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in clause A.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in clause A.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 8.1.6.5-2
si-RequestForHO		TRUE	As specified in section 5.5.3.1 in TS 36.331 [5].
Time offset between cells	ms	3	Asynchronous cells
T1	s	5	
T2	s	≤30	UE should report cell within 25.6s (20 DRX cycles)
T3	s	5	

8.1.6.4.2 Test procedure

The test comprises of one active cell and one neighbour 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.

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.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table 8.1.6.5-1. Propagation conditions are set according to Annex B clauses B.1.1. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration with event A3 configured message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.1.6.5-1.

6. UE shall transmit a MeasurementReport message triggered by Event A3.

7. SS shall transmit an RRCConnectionReconfiguration message during period T2, The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE.

8. The SS shall start T3 timer when the last TTI containing the RRC message implying SI reading is sent to UE.

9. The UE shall transmit RRCConnectionReconfigurationComplete message.

10. UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3. If the overall delays measured from the beginning of time period T3 is less than 170 ms then the number of successful tests is increased by one. If the UE fails to report the cell global identifier within the overall delays measured requirement then the number of failure tests is increased by one.

11. After the SS receive the MeasurementReport message in step 10) or when T3 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

12. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

13. After the RRC connection release, the SS:
- transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
or
- switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

14. Repeat step 2-13 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.1.6.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.1.6.4.3-1: Common Exception messages for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-2 Table H.3.1-7

Table 8.1.6.4.3-2: *RRCConnectionReconfiguration*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.1, Table 4.6.1-8 RRCConnectionReconfiguration			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier-DL		
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
measConfig	MeasConfig -DEFAULT		
radioResourceConfigDedicated	RadioResourceConfigDedicated-HO		
}			
}			
}			
}			

Table 8.1.6.4.3-3: *MAC-MainConfig-RBC*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.8.2.1.5, Table 4.8.2.1.5-1 MAC-MainConfig-RBC			
Information Element	**Value/remark**	**Comment**	**Condition**
MAC-MainConfig-RBC ::= SEQUENCE {			
ul-SCH-Config SEQUENCE {			
maxHARQ-Tx	n5		
periodicBSR-Timer	sf20		
retxBSR-Timer	sf1280		
ttiBundling	FALSE		
}			
drx-Config CHOICE {			
Setup SEQUENCE {			
onDurationTimer	psf1		
drx-InactivityTimer	psf1		
drx-RetransmissionTimer	psf1		
longDRX-CycleStartOffset CHOICE {		sf1280 typical value in real network for real-time services.	
sf1280	0		
}			
shortDRX	Not present		
}			
}			
timeAlignmentTimerDedicated	Infinity		
}			

Table 8.1.6.4.3-4: *PhysicalConfigDedicated-DEFAULT*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.8.2.1.6, Table 4.8.2.1.6-1 PhysicalConfigDedicated-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
PhysicalConfigDedicated-DEFAULT ::= SEQUENCE {			
…			
schedulingRequestConfig	SchedulingRequest-Config-DEFAULT		
}			

Table 8.1.6.4.3-5: *SchedulingRequest-Config-DEFAULT*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.3, Table 4.6.3-20 SchedulingRequest-Config-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequest-Config-DEFAULT ::= CHOICE {			
setup SEQUENCE {			
sr-PUCCH-ResourceIndex	41	10 MHz channel bandwidth parameter	
sr-ConfigIndex	0		
dsr-TransMax	n4		
}			
}			

Table 8.1.6.4.3-6: *ReportConfigEUTRA-A3*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-6 (-3 dB)	-3 is actual value in dB (-6 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			
}			

Table 8.1.6.4.3-7: *MeasResults*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.1.6.4.3-8: *MeasResultListEUTRA*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step6)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
measResult SEQUENCE {			
rsrpResult		Set according to specific test INTEGER(0..97)	
rsrqResult		Set according to specific test INTEGER(0..34)	
}			
}			

Table 8.1.6.4.3-9: *ReportConfigEUTRA-PERIODICAL*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step7)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-7 ReportConfigEUTRA-PERIODICAL			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-PERIODICAL ::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose	reportCGI		
}			
}			
reportAmount	1		
si-RequestForHO-r9	setup		
}			

Table 8.1.6.4.3-10: *MeasResultListEUTRA*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step10)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
cgi-Info SEQUENCE{			
cellGlobalId SEQUENCE{			
plmn-Identity	plmn-Identity		
cellIdentity	cellIdentity		
}			
trackingAreaCode			
plmn-IdentityList			
}			
}			

Table 8.1.6.4.3-11: *MeasObjectEUTRA-GENERIC*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-2 MeasObjectEUTRA-GENERIC			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-GENERIC(Freq) ::= SEQUENCE {			
cellForWhichToReportCGI	Physical Cell ID of Cell 2		Cell 1
}			

Table 8.1.6.4.3-12: *MeasConfig-DEFAULT*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step7)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1 MeasConfig-DEFAULT:			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId))OF SEQUENCE {	1 entry		
reportConfigId	idReportConfig-P		
reportConfig	ReportConfigEUTRA-PERIODICAL		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) of SEQUENCE {	1 entry		
measId	2		
measObjectId	IdMeasObject-f1		
reportConfigId	IdReportConfig-P		
}			
measGapConfig	Not present		
}			

Table 8.1.6.4.3-13: *MeasResults*: Additional E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step10)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	2	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

8.1.6.5 Test requirement

Tables 8.1.6.4.1-1, 8.1.6.5-1, 8.1.6.5-2 and 8.1.6.5-3 define the primary level settings including test tolerances for E-UTRAN FDD - FDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps when DRX is used test.

Table 8.1.6.5-1: Cell Specific Test requirement 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 Number		1			1		
$BW_{channel}$	MHz	10			10		
OCNG Patterns defined in D.1.1 (OP.1 FDD) and in D.1.2 (OP.2 FDD)		OP.1 FDD	OP.1 FDD	OP.1 FDD	OP.2 FDD	OP.2 FDD	OP.2 FDD
PBCH_RA	dB	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						
$\hat{E}_s/I_{ot}$	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 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 8.1.6.5-2: 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 section 6.3.2 in 3GPP TS 36.331[5]
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table 8.1.6.5-3: *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 section 6.3.2 in 3GPP TS 36.331[5]
sr-ConfigIndex	0	For further information see section 6.3.2 in 3GPP TS 36.331[5] and section10.1 in 3GPP TS 36.213 [8]

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

The overall delays measured in the test may be up to 2xTTI$_{DCCH}$ higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Test requirement = RRC Procedure delay + $T_{identify\_CGI,\,intra}$ + TTI insertion uncertainty

RRC procedure delay=15ms

$$T_{identify\_CGI,\,intra} = T_{basic\_identify\_CGI,\,intra} \quad ms$$

$T_{basic\_identify\_CGI,intra}$ = 150 ms

TTI insertion uncertainty = 2 ms

The overall delay measured is 167 ms, allow 170 ms.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.1.7 E-UTRAN FDD-FDD Intra-Frequency Event-Triggered Reporting under Time Domain Measurement Resource Restriction with Non-MBSFN ABS (eICIC)

Editor's notes: This test is incomplete. The following aspects are either missing or not yet determined:

- The test tolerances are undefined

8.1.7.1 Test purpose

To verify that the UE correctly detects and reports Event A3 (neighbour becomes offset better than PCell) defined in [5] under a time domain measurement resource restriction and non-MBSFN ABS configured in the aggressor cell.

8.1.7.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 10 and forward. Applicability requires support for FGI bit 115.

8.1.7.3 Minimum conformance requirements

When no DRX is in use the UE shall be able to identify a new detectable FDD intra-frequency cell within

$$T_{identify\_intra\_eICIC} = T_{basic\_identify\_E\text{-}UTRA\_FDD\_eICIC,intra} \cdot \frac{T_{Measurement\_Period\_eICIC,\,Intra}}{T_{Intra}} \quad ms$$

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 TS 36.133 [4] clauses 9.1.2.3 and 9.1.2.4 and RSRQ related side conditions given in TS 36.133 [4] clause 9.1.5.2 are fulfilled for a corresponding Band,

- SCH_RP and SCH Ês/Iot according to Annex I.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 $Y_{measurement\_intra\_eICIC}$ cells , where $Y_{measurement\_intra\_eICIC}$ is defined in the following equation. If the UE has identified more than $Y_{measurement\_intra\_eICIC}$ 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.

$$Y_{measurement\_intra\_eICIC} = Floor\left\{ X_{basic\_measurement\_FDD\_eICIC} \cdot \frac{T_{Intra}}{T_{Measurement\_Period\_eICIC, Intra}} \right\} \text{ cells}$$

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 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 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 above. 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 above 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 ± 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.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.8.1 and A.8.1.7.

8.1.7.4 Test description

8.1.7.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator), faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A Figure A.15.
2. The general test parameter settings are set up according to Table 8.1.7.4.1-1.
3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.1.7.4.3.

5. At this stage only Cell 1 is switched on. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1.

Table 8.1.7.4.1-1: General test parameters for E-UTRAN FDD-FDD intra-frequency event-triggered reporting under time domain measurement resource restriction with Non-MBSFN ABS (eICIC)

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.2.1
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 C.3.1.1.1-1
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 !=0	Cell PCIs are selected so that the condition is met
ABS pattern		'1000000010000000100000001000000010000000'	FDD ABS Pattern Info IE, as defined in TS 36.423, 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 40 = 0. No MBSFN subframes are configured in the ABS subframes.
Time domain measurement resource restriction pattern for neighbour cell measurements on RF Channel 1		'1000000010000000100000001000000010000000'	Time domain measurement resource restriction pattern for neighbour 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		'0100000001000000010000000100000001000000'	Configured during T1 for Cell 1 measurements

8.1.7.4.2 Test procedure

There are two synchronous E-UTRA cells in the test on the same RF channel. Cell 1 is the Pcell and also the aggressor cell, Cell 2 is the neighbour victim cell to be identified. Non-MBSFN ABS pattern is configured for aggressor cell (Cell 1). The UE is configured with a time domain measurement resource restriction pattern for performing E-UTRAN FDD intra-frequency measurements on neighbour cells (Cell 2). The UE is also configured with a time domain measurement resource restriction pattern for PCell (Cell 1) measurements. 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 on Cell 2. The information for both measurement patterns shall be provided to the UE during T1.

1. Ensure the UE is in State 3A-RF in Cell 1 according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters for both Cell 1 and Cell 2 according to T1 in Table 8.1.7.5-1. Propagation conditions are set according to Annex B clause B.2.2. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.1.7.5-1.

6. UE shall transmit a MeasurementReport message triggered by Event A3. If the overall delays measured from the beginning of time period T2 is less than 1002 ms then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with UE-Identity) for the UE and ensures the UE is in State 3A in Cell 1 according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF in Cell 1 according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF in Cell 1 according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.1.7.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.1.7.4.3-1: Common Exception messages for E-UTRAN FDD-FDD intra-frequency event-triggered reporting under time domain measurement resource restriction with Non-MBSFN ABS (eICIC)

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-2 Table H.3.1-7

Table 8.1.7.4.3-2: *ReportConfigEUTRA-A3*: Additional E-UTRAN FDD-FDD intra-frequency event-triggered reporting under time domain measurement resource restriction with Non-MBSFN ABS (eICIC)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-22 (-11 dB)	-11 is actual value in dB (-22 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			

Table 8.1.7.4.3-3: *MeasResults*: Additional E-UTRAN FDD-FDD intra-frequency event-triggered reporting under time domain measurement resource restriction with Non-MBSFN ABS (eICIC)

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being perfomed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCell CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.1.7.4.3-4: *MeasResultListEUTRA*: Additional E-UTRAN FDD-FDD intra-frequency event-triggered reporting under time domain measurement resource restriction with Non-MBSFN ABS (eICIC)

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
measResult SEQUENCE {			
rsrpResult		Set according to specific test INTEGER(0..97)	
rsrqResult		Set according to specific test INTEGER(0..34)	
}			
}			

Table 8.1.7.4.3-5: *MeasObjectEUTRA-GENERIC*: Additional E-UTRAN FDD-FDD intra-frequency event-triggered reporting under time domain measurement resource restriction with Non-MBSFN ABS (eICIC)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-2 MeasObjectEUTRA-GENERIC			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-GENERIC(Freq) ::= SEQUENCE {			
measSubframePatternConfigNeigh-r10 CHOICE {			
setup SEQUENCE {			
measSubframePatternNeigh-r10 CHOICE {			
subframePatternFDD-r10	‘1000000010000000100000001000000010000000’	BIT STRING (SIZE (40))	
}			
measSubframeCellList-r10 SEQUENCE {			
start	Physical Cell ID of Cell 2		
range	Not present		
}			
}			
}			
}			

Table 8.1.7.4.3-6: *RadioResourceConfigDedicated-SRB2-DRB:* Additional E-UTRAN FDD-FDD intra-frequency event-triggered reporting under time domain measurement resource restriction with Non-MBSFN ABS (eICIC)

Derivation Path: TS 36.508 [7] clause 4.6.3, Table 4.6.3-16 RadioResourceConfigDedicated-SRB2-DRB(n,m)			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated-SRB2-DRB(n, m) ::= SEQUENCE {			
MeasSubframePatternPCell-r10 CHOICE {			
setup SEQUENCE {			
subframePatternFDD-r10	‘0100000001000000010000000100000001000000’	BIT STRING (SIZE (40))	Cell1
}			
}			
}			

8.1.7.5 Test requirements

Table 8.1.7.5-1: Cell specific test requirement parameters for E-UTRAN FDD-FDD Intra-Frequency Event-Triggered Reporting under Time Domain Measurement Resource Restriction with Non-MBSFN ABS (eICIC)

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
E-UTRA RF Channel Number		1		1	
$BW_{channel}$	MHz	10		10	
OCNG Patterns defined in D.1.5 (OP. 5 FDD) and in D.1. 6 (OP. 6 FDD)		OP. 5 FDD		OP. 6 FDD	
PBCH_RA	dB	Non-ABS and ABS subframe channel powers defined in Table C.3.1.1.1-1.		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				
N_{oc} Note 3	dBm/15 kHz	-98			
$(\hat{E}_s / N_{oc})_{meas}$ Note 5	dB	1+TT	1+TT	-Infinity	-4+TT
$(\hat{E}_s / N_{oc})_{ABS}$	dB	1+TT	1+TT	N/A	N/A
RSRP Note 4,5	dBm/15 kHz	-97+TT	-97+TT	-Infinity	-102+TT
SCH_RP Note 4	dBm/15 kHz	-97+TT	-97+TT	-Infinity	-102+TT
CRS $\hat{E}_s / I_{ot}$	dB	1+TT	-0.5+TT	-Infinity	-4+TT
SCH $\hat{E}_s / I_{ot}$	dB	1+TT	-0.5+TT	-Infinity	-7.5+TT
Propagation Condition		ETU30			

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. 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: RSRP is estimated for Cell 2 during the restricted measurement subframes for neighbour cells. RSRP is estimated for Cell 1 during the PCell restricted subframes.

The overall delays measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event A3 triggered measurement report to Cell 2.

The overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify\_intra\_eICIC}$

$$T_{identify\_intra\_eICIC} = T_{basic\_identify\_E-UTRA\_FDD\_eICIC,intra} \cdot \frac{T_{Measurement\_Period\_eICIC,\ Intra}}{T_{Intra}} \quad ms$$

$T_{basic\_identify\_E-UTRA\_FDD\_eICIC,intra} = 1000$ ms

$T_{Measurement\_Period\_eICIC,\ Intra} = 200$ ms

$T_{Intra} = 200$ ms

TTI insertion uncertainty = 2 ms

The overall delays measured shall be less than a total of 1002 ms in this test case (note: this gives a total of 1000 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.2 E-UTRAN TDD intra frequency measurements

8.2.1 E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

8.2.1.1 Test purpose

To verify the UE's ability to make a correct reporting of an event under fading propagation conditions in synchronous cells within the E-UTRA TDD-TDD intra frequency cell search requirements.

8.2.1.2 Test applicability

This test applies to all types of E-UTRA TDD UE release 8 and forward. Applicability requires support for FGI bit 5.

8.2.1.3 Minimum conformance requirements

When no DRX is in use the UE shall be able to identify a new detectable TDD intra frequency cell within

$$T_{identify\ intra} = T_{basic\,identify\,E-UTRA\_TDD,\ intra} \cdot \frac{T_{Measurement\ Period,\ Intra}}{T_{Intra}} \quad ms$$

where

$T_{basic\_identify\_E-UTRA\_TDD,intra}$ is 800 ms

A cell shall be considered detectable when

- RSRP related side condition given in TS 36.133 [4] Sections 9.1.2.1 and 9.1.2.2 and RSRQ related side conditions given in Section 9.1.5.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex I.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 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 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 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.

$$Y_{\text{measurement intra}} = Floor\left\{ X_{\text{basic measurement TDD}} \cdot \frac{T_{\text{Intra}}}{T_{\text{Measurement\_Period,Intra}}} \right\} \text{cells}$$

where

$X_{\text{basic measurement TDD}}$ = 8 (cells)

$T_{\text{Measurement\_Period Intra}}$ = 200 ms. The measurement period for Intra frequency RSRP and RSRQ measurements.

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.

The RSRP measurement accuracy for all measured cells shall be as specified in TS 36.133 [4] sub-clauses 9.1.2.1 and 9.1.2.2, and the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.5.1.

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in TS 36.133 [4] sections 9.1.2.1, 9.1.2.2, and 9.1.5.1, respectively.

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in TS 36.133 [4] sections 9.1.2.1, 9.1.2.2, and 9.1.5.1, respectively.

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] sections 9.1.2.1, 9.1.2.2, and 9.1.5.1, 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 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 $T_{\text{identify\_intra}}$ defined in TS 36.133 [4] Section 8.1.2.2.2.1 When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{\text{identify\_intra}}$ defined in TS 36.133 [4] section 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 $T_{\text{Measurement\_Period Intra}}$ 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 an additional delay can be expected

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.2.2 and A.8.1.2.

8.2.1.4 Test description

8.2.1.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.15.

2. The general test parameter settings are set up according to Table 8.2.1.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.2.1.4.3.

5. There is one E-UTRA TDD carrier and two cells specified in the test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.2.1.4.1-1: General test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.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. 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 Table 8.2.1.5-2
Time offset between cells	μs	3	Synchronous cells 3μs or 92*Ts
T1	s	5	
T2	s	5	

8.2.1.4.2 Test procedure

The test consists of one active cell and one neighbour cell. 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 durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table 8.2.1.5-1. Propagation conditions are set according to Annex B clauses B.1.1 and B.2.2.T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.2.1.5-1.

6. UE shall transmit a MeasurementReport message triggered by Event A3. If the overall delays measured from the beginning of time period T2 is less than 802 ms then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

7. After the SS receives the MeasurementReport message in step 6 or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.2.1.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.2.1.4.3-1: Common Exception messages for E-UTRAN TDD-TDD intra frequency event triggered reporting under fading propagation conditions in synchronous cells test requirement

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-2 Table H.3.1-7 Table H.3.6-2

Table 8.2.1.4.3-2: *ReportConfigEUTRA-A3*: Additional E-UTRAN TDD-TDD intra frequency event triggered reporting under fading propagation conditions in synchronous cells test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12 (-6 dB)	-6 is actual value in dB (-12 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
Hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			

Table 8.2.1.4.3-3: MeasResults: Additional E-UTRAN TDD-TDD intra frequency event triggered reporting under fading propagation conditions in synchronous cells test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults::= SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {		Report Cell 1	
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.2.1.4.3-4: *MeasResultListEUTRA*: Additional E-UTRAN TDD-TDD intra frequency event triggered reporting under fading propagation conditions in synchronous cells test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultLIstEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 2	
physCellId	PhysCellId of the Cell 2		
measResult SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
}			

8.2.1.5 Test requirement

Tables 8.2.1.4.1-1, 8.2.1.5-1, and 8.2.1.5-2 define the primary level settings including test tolerances for E-UTRAN TDD-TDD event triggered reporting under fading propagation conditions in synchronous cells test.

Table 8.2.1.5-1: Cell specific test parameters for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
E-UTRA RF Channel Number		1		1	
$BW_{channel}$	MHz	10		10	
OCNG Pattern defined in A.2.1 (OP.1 TDD) and in A.2.2 (OP.2)		OP.1 TDD		OP.2 TDD	
PBCH_RA	dB	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[Note1]	dB				

OCNG_RB Note 1	dB				
N_{oc}	dBm/15 kHz	-98			
RSRP	dBm/15 kHz	-91.40	-91.40	-Infinity	-91.40
$\hat{E}_s/I_{ot}$	dB	6.60	-0.86	-Infinity	-0.86
SCH_RP	dBm/15 kHz	-91.40	-91.40	-Infinity	-91.40
$\hat{E}_s/N_{oc}$	dB	6.60	6.60	-Infinity	6.60
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.					

Table 8.2.1.5-2: Reference DRX-Configuration to be used in E-UTRAN TDD-TDD event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Value	Comments
Reference configuration	DRX_L	As defined in 4.8.2.1.5 in TS 36.508 [7.]
onDurationTimer	psf6	
drx-InactivityTimer	psf1920	
drx-RetransmissionTimer	psf16	
longDRX-CycleStartOffset	sf1280, 0	
shortDRX	disabled	
Note: For further information see section 6.3.2 in 3GPP TS 36.331 [5].		

The overall delays measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event A3 triggered measurement report to Cell 2.

The 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.

The overall delays measured test requirement is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify\_intra}$

$$T_{identify\_intra} = T_{basic\ identify\ E-UTRA\_TDD,\ intra} \cdot \frac{T_{Measurement\ Period,\ Intra}}{T_{Intra}}$$

$T_{basic\_identify\_E-UTRA\_TDD,intra}$ = 800 ms

$T_{Measurement\_Period,Intra}$ = 200 ms

T_{Intra} = 200 ms

TTI insertion uncertainty = 2 ms

The overall delays measured shall be less than a total of 802 ms in this test case (note: this gives a total of 800 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.2.2 E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells with DRX

8.2.2.1 Test purpose

To verify the UE's ability to make a correct reporting of an event under fading propagation conditions in synchronous cells with DRX within the E-UTRA TDD-TDD intra frequency cell search in DRX requirements.

8.2.2.2 Test applicability

This test applies to all types of E-UTRA TDD UE release 8 and forward. Applicability requires support for FGI bit 5.

8.2.2.3 Minimum conformance requirements

Note: The state when no DRX is used is assumed to be the one in which the DRX Inactivity Timer is running, and the state when DRX is used is assumed to be otherwise for this performance requirement.

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 8.2.2.3-1

Table 8.2.2.3-1: Requirement to identify a newly detectable TDD intra frequency cell

DRX cycle length (s)	$T_{identify\_intra}$ (s) (DRX cycles)
≤0.04	0.8 (Note1)
0.04<DRX-cycle≤0.08	Note2 (40)
0.08<DRX-cycle≤2.56	Note2(20)
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 TS 36.133 [4] Sections 9.1.2.1 and 9.1.2.2 and RSRQ related side conditions given in Section 9.1.5.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex I.2.1 for a corresponding Band.

In the RRC_CONNECTED state with DRX cycles of 80ms or greater the measurement period for intra frequency measurements is $T_{measure\_intra}$ as shown in table 8.2.2.3-2. The UE shall be capable of performing RSRP and RSRQ measurements for TS 45.008 [15] 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 8.2.2.3-2: 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-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.	

The RSRP measurement accuracy for all measured cells shall be as specified in TS 36.133 [4] sub-clauses 9.1.2.1 and 9.1.2.2, and the RSRQ measurement accuracy for all measured cells shall be as specified in the sub-clause 9.1.5.1.

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in TS 36.133 [4] sections 9.1.2.1, 9.1.2.2, and 9.1.5.1, respectively.

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in TS 36.133 [4] sections 9.1.2.1, 9.1.2.2, and 9.1.5.1, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in TS 36.133 [4] section 8.1.2.2.2.1.3 Event Triggered Reporting.

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] sections 9.1.2.1, 9.1.2.2, and 9.1.5.1, 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 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 $T_{identify\_intra}$ defined in TS 36.133 [4] Section 8.1.2.2.2 When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify\_intra}$ defined in TS 36.133 [4] section 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 an additional delay can be expected

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.2.2 and A.8.2.2.

8.2.2.4 Test description

8.2.2.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.15.

2. The general test parameter settings are set up according to Table 8.2.2.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.2.2.4.3.

5. There is one E-UTRA TDD carrier and two cells specified in the test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.2.2.4.1-1: 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	
PDSCH parameters		DL Reference Measurement Channel R.0 TDD		As specified in section A.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD		As specified in section A.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[9]. The same configuration in both cells
Uplink-downlink configuration		1		As specified in table 4.2-2 in TS 36.211[9]. 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 8.2.2.4-2
Time offset between cells	μs	3		Synchronous cells 3μs or 92*Ts
T1	s	5		
T2	s	5	30	

8.2.2.4.2 Test procedure

The test consists of one active cell and one neighbour cell. 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 durations 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, the 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.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
2. Set the parameters according to T1 in Table 8.2.2.5-1. Propagation conditions are set according to Annex B clauses B.1.1 and B.2.2. T1 starts.
3. SS shall transmit an RRCConnectionReconfiguration message.
4. The UE shall transmit RRCConnectionReconfigurationComplete message.
5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.2.2.5-1.
6. UE shall transmit a MeasurementReport message triggered by Event A3. If the overall delays measured from the beginning of time period T2 is less than 842 ms for Test 1 and 26882 ms for Test 2 then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.
7. After the SS receives the MeasurementReport message in step 6 or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.
8. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

11. Repeat step 1-10 for each sub-test in Table 8.2.2.4.1-1 as appropriate.

8.2.2.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.2.2.4.3-1: Common Exception messages for E-UTRAN TDD-TDD intra frequency event triggered reporting under fading propagation conditions in synchronous cells test requirement

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-2 Table H.3.1-7

Table 8.2.2.4.3-2: RRCConnectionReconfiguration: Additional E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used test requirement

Derivation Path: TS 36.508 [7] clause 4.6.1, Table 4.6.1-8 RRCConnectionReconfiguration			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier-DL		
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
measConfig			
	MeasConfig-DEFAULT		MEAS
radioResourceConfigDedicated SEQUENCE {			
MAC-MainConfig-RBC SEQUENCE {			
ul-SCH-Config SEQUENCE {			
maxHARQ-Tx	n5		
periodicBSR-Timer	sf20		
retxBSR-Timer	sf1280		
ttiBundling	FALSE		
}			
drx-Config CHOICE {			
setup SEQUENCE {			
onDurationTimer	psf1		
drx-InactivityTimer	psf1		
drx-RetransmissionTimer	psf1		
longDRX-CycleStartOffset CHOICE {			
sf40	9	For Test 1	
sf1280	9	For Test 2	
}			
shortDRX	Not present		
}			
}			
timeAlignmentTimerDedicated	sf500		
}			
PhysicalConfigDedicated SEQUENCE {			
schedulingRequestConfig	SchedulingRequest-Config-DEFAULT		
}			
}			
}			
}			
}			
}			

Table 8.2.2.4.3-3: ReportConfigEUTRA-A3: Additional E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12 (-6 dB)	-6 is actual value in dB (-12 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			
}			

Table 8.2.2.4.3-4: SchedulingRequest-Config-DEFAULT: Additional E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used test requirement

Derivation Path: TS 36.508 [7] clause 4.6.3, Table 4.6.3-20: SchedulingRequest-Config-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequest-Config-DEFAULT ::= CHOICE {			
setup SEQUENCE {			
sr-PUCCH-ResourceIndex	41	Channel-bandwidth-dependent parameter	
sr-ConfigIndex	2		
dsr-TransMax	n4		
}			
}			

Table 8.2.2.4.3-5: MeasResults: Additional E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used test requirement

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	INTEGER(0..97)	Set according to specific test	
rsrqResult	INTEGER(0..34)	Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.2.2.4.3-6: MeasResultListEUTRA: Additional E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used test requirement

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultsLIstEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
1 entry physCellId	PhysCellId	INTEGER (0..503) of Cell 2	
measResult SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
}			

8.2.2.5 Test requirement

Tables 8.2.2.5-1, 8.2.2.5-2 and 8.2.2.5-3 defines the primary level settings including test tolerances for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used test.

Table 8.2.2.5-1: 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	Cell 1		Cell 2	
		T1	T2	T1	T2
E-UTRA RF Channel Number		1		1	
$BW_{channel}$	MHz	10		10	
OCNG Pattern defined in D.2.1 (OP.1 TDD) and in D.2.2 (OP.2)		OP.1 TDD		OP.2 TDD	
PBCH_RA	dB	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				

N_{oc} Note 2	dBm/15 kHz	-98			
RSRP Note 3	dBm/15 kHz	-91.40	-91.40	-Infinity	-91.40
$\hat{E}_s/I_{ot}$	dB	6.60	-0.86	-Infinity	-0.86
SCH_RP Note 3	dBm/15 kHz	-91.40	-91.40	-Infinity	-91.40
$\hat{E}_s/N_{oc}$	dB	6.60	6.60	-Infinity	6.60
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: 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 8.2.2.5-2: 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
	Value	Value	
onDurationTimer	psf1	psf1	As specified in section 6.3.2 in 3GPP TS 36.331 [5]
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	Sf40	sf1280	
shortDRX	disable	disable	

Table 8.2.2.5-3: *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
	Value	Value	
TimeAlignmentTimer	sf500	sf500	As specified in section 6.3.2 in 3GPP TS 36.331 [5]
sr-ConfigIndex	2	2	For further information see section 6.3.2 in 3GPP TS 36.331 [5] and section 10.1 in 3GPP TS 36.213 [8].

In Test 1 when DRX cycle length = 40 ms is used, the overall delay measured is defined as the time from the beginning of time period T2 to the moment when the UE send one Event A3 triggered measurement report on PUSCH.

In Test 2 when DRX cycle length = 1280 ms is used, the overall delay measured 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.

For both tests:

The overall delay measured may be up to 2xTTI$_{DCCH}$ higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

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.

The overall delay measured when DRX cycle length is 40 ms test requirement is expressed as:

Overall delay measured = measurement reporting delay + TTI insertion uncertainty + DRX cycle length

Measurement reporting delay = T$_{identify_intra}$

$T_{identify\_intra}$ = 800 ms. When DRX cycle length is 40 ms then the $T_{identify\_intra}$ is 0.8 s.

TTI insertion uncertainty = 2 ms

DRX cycle length = 40 ms

The overall delay measured when DRX cycle length is 40 ms shall be less than a total of 842 ms.

The overall delay measured when DRX cycle length is 1280 ms test requirement is expressed as:

Overall delay measured = measurement reporting delay + TTI insertion uncertainty + DRX cycle length

Measurement reporting delay = $T_{identify\_intra}$

$T_{identify\_intra}$ = 25600 ms. When DRX cycle length is 1280 ms then the $T_{identify\_intra}$ is 20 x 1280 ms.

TTI insertion uncertainty = 2 ms

DRX cycle length = 1280 ms

The overall delay measured when DRX cycle length is 1280 ms shall be less than a total of 26882 ms.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.2.3 E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

8.2.3.1 Test purpose

To verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in TS 36.133[4] section 8.1.2.2.4.

8.2.3.2 Test applicability

This test applies to all types of E-UTRA TDD UE release 9 and forward with support of intra-frequency SI acquisition for HO.

8.2.3.3 Minimum conformance requirements

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 section 5.5.3.1 of TS 36.331 [5]. 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', the UE shall be able to identify a new CGI of E-UTRA cell within:

$$T_{identify\_CGI,\, intra} = T_{basic\_identify\_CGI,\, intra} \quad ms$$

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.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in TS 36.133 [4] Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex I.2.2 for a corresponding Band

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 3GPP TS 36.331 [5] are used.

Given that continuous DL data allocation and no DRX is used, and no measurement gaps are configured, the UE shall be able to transmit at least the number of ACK/NACKs stated in Table 8.2.3.3-1 during the identification of a new CGI of E-UTRA cell.

Table 8.2.3.3-1: 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	18
1	35
2	43
3	36
4	39
5	42
6	30

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.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.2.4 and A.8.2.3.

8.2.3.4 Test description

8.2.3.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.20.

2. The general test parameter settings are set up according to Table 8.2.3.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.2.3.4.3.

5. There is one E-UTRA TDD carrier and two cells specified in the test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.2.3.4.1-1: General test parameters for E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.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[9]. The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211[9]. 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 section 5.5.3.1 in TS 36.331 [5].
Time offset between cells	μs	3	Synchronous cells
T1	s	5	
T2	s	≤10	
T3	s	5	

8.2.3.4.2 Test procedure

The test comprises of one active cell and one neighbour cell. 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.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
2. Set the parameters according to T1 in Table 8.2.3.5-1. Propagation conditions are set according to Annex B clauses B.1.1. T1 starts.
3. SS shall transmit an RRCConnectionReconfiguration with event A3 configured message.
4. The UE shall transmit RRCConnectionReconfigurationComplete message.
5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.2.3.5-1.
6. UE shall transmit a MeasurementReport message triggered by Event A3.
7. SS shall transmit an RRCConnectionReconfiguration message during period T2, The RRC message shall create a measurement report configuration with purpose reportCGI and si-RequestForHO set to TRUE.
8. The SS shall start T3 timer when the last TTI containing the RRC message implying SI reading is sent to UE.
9. The UE shall transmit RRCConnectionReconfigurationComplete message.
10. UE shall transmit a MeasurementReport message containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3. 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. If the overall delays measured from the beginning of time period T3 is less than 170 ms, and the UE have more than 47 ACK/NACKs transmitted from the start of T3 until 170 ms, then the number of successful tests is increased by one. If the UE

fails to report the cell global identifier within the overall delays measured requirement, or the UE have less than 47 ACK/NACKs transmitted from the start of T3 until 170 ms, then the number of failure tests is increased by one.

11. After the SS receive the MeasurementReport message in step 10) or when T3 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

12. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

13. After the RRC connection release, the SS:
- transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
or
- switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

14. Repeat step 2-13 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.2.3.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.2.3.4.3-1: Common Exception messages for E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-2 Table H.3.1-7

Table 8.2.3.4.3-2: *ReportConfigEUTRA-A3*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-6 (-3 dB)	-3 is actual value in dB (-6 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			
}			

Table 8.2.3.4.3-3: *MeasResults*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.2.3.4.3-4: *MeasResultListEUTRA*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step6)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
measResult SEQUENCE {			
rsrpResult		Set according to specific test INTEGER(0..97)	
rsrqResult		Set according to specific test INTEGER(0..34)	
}			
}			

Table 8.2.3.4.3-5: ReportConfigEUTRA-PERIODICAL: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step7)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-7 ReportConfigEUTRA-PERIODICAL			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-PERIODICAL ::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose	reportCGI		
}			
}			
reportAmount	1		
si-RequestForHO-r9	setup		
}			

Table 8.2.3.4.3-6: *MeasResultListEUTRA*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step10)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
cgi-Info SEQUENCE{			
cellGlobalId SEQUENCE{			
plmn-Identity	plmn-Identity		
cellIdentity	cellIdentity		
}			
trackingAreaCode			
plmn-IdentityList			
}			
}			

Table 8.2.3.4.3-7: *MeasObjectEUTRA-GENERIC*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-2 MeasObjectEUTRA-GENERIC			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-GENERIC(Freq) ::= SEQUENCE {			
cellForWhichToReportCGI	Physical Cell ID of Cell 2		Cell 1
}			

Table 8.2.3.4.3-8: *MeasConfig-DEFAULT*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step 7)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1 MeasConfig-DEFAULT:			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId))OF SEQUENCE {	1 entry		
reportConfigId	idReportConfig-P		
reportConfig	ReportConfigEUTRA-PERIODICAL		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) of SEQUENCE {	1 entry		
measId	2		
measObjectId	IdMeasObject-f1		
reportConfigId	IdReportConfig-P		
}			
measGapConfig	Not present		
}			

Table 8.2.3.4.3-9: *MeasResults*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step10)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	2	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

8.2.3.5 Test requirement

Tables 8.2.3.4.1-1 and 8.2.3.5-1 define the primary level settings including test tolerances for E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test.

Table 8.2.3.5-1: Cell Specific Test requirement Parameters for E-UTRAN TDD - 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	T3
E-UTRA RF Channel Number		1			1		
$BW_{channel}$	MHz	10			10		
OCNG Patterns defined in D.2.1 (OP.1 TDD) and in D.2.2 (OP.2 TDD)		OP.1 TDD	OP.1 TDD	OP.1 TDD	OP.2 TDD	OP.2 TDD	OP.2 TDD
PBCH_RA	dB	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						
$\hat{E}_s/I_{ot}$	dB	8	-3.33	-3.33	-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 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.							

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

The overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Test requirement = RRC Procedure delay + $T_{identify\_CGI, intra}$ + TTI insertion uncertainty

RRC procedure delay=15ms

$$T_{identify\_CGI, intra} = T_{basic\_identify\_CGI, intra} \quad ms$$

$T_{basic\_identify\_CGI,intra}$ = 150 ms

TTI insertion uncertainty = 2 ms

The overall delays measured is 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.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

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 8.2.3.3-1. 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.

8.2.4 E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

8.2.4.1 Test purpose

To verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in DRX.

8.2.4.2 Test applicability

This test applies to all types of E-UTRA TDD UE release 9 and forward with support of intra-frequency SI acquisition for HO. Applicability requires support for FGI bit 5

8.2.4.3 Minimum conformance requirements

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 section 5.5.3.1 of TS 36.331 [5]. 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', the UE shall be able to identify a new CGI of E-UTRA cell within:

$$\mathrm{T}_{\mathrm{identify\_CGI,\,intra}} = \mathrm{T}_{\mathrm{basic\_identify\_CGI,\,intra}} \quad ms$$

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.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in TS 36.133 [4] Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex I.2.2 for a corresponding Band

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 3GPP TS 36.331 [5] are used.

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.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.2.4 and A.8.2.4.

8.2.4.4 Test description

8.2.4.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.20.

2. The general test parameter settings are set up according to Table 8.2.4.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.2.4.4.3.

5. There is one E-UTRA TDD carrier and two cells specified in the test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.2.4.4.1-1: General test parameters for E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps when DRX is used

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.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[9]. The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211[9]. 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 8.2.4.5-2
si-RequestForHO		TRUE	As specified in section 5.5.3.1 in TS 36.331 [5].
Time offset between cells	μs	3	Synchronous cells
T1	s	5	
T2	s	≤30	UE should report cell within 25.6s (20 DRX cycles)
T3	s	5	

8.2.4.4.2 Test procedure

The test comprises of one active cell and one neighbour 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.

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.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table 8.2.4.5-1. Propagation conditions are set according to Annex B clauses B.1.1. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration with event A3 configured message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.2.4.5-1.

6. UE shall transmit a MeasurementReport message triggered by Event A3.

7. SS shall transmit an RRCConnectionReconfiguration message during period T2, The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE.

8. The SS shall start T3 timer when the last TTI containing the RRC message implying SI reading is sent to UE.

9. The UE shall transmit RRCConnectionReconfigurationComplete message.

10. UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3. If the overall delays measured from the beginning of time period T3 is less than 170 ms then the number of successful tests is increased by one. If the UE fails to report the cell global identifier within the overall delays measured requirement then the number of failure tests is increased by one.

11. After the SS receive the MeasurementReport message in step 10) or when T3 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

12. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

13. After the RRC connection release, the SS:
    - transmits in Cell 1 a Paging message (including PagingRecord with UE-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
    or
    - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

14. Repeat step 2-13 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.2.4.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.2.4.4.3-1: Common Exception messages for E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-2 Table H.3.1-7

Table 8.2.4.4.3-2: *RRCConnectionReconfiguration*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.1, Table 4.6.1-8 RRCConnectionReconfiguration			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier-DL		
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
measConfig	MeasConfig -DEFAULT		
radioResourceConfigDedicated	RadioResourceConfigDedicated-HO		
}			
}			
}			
}			

Table 8.2.4.4.3-3: *MAC-MainConfig-RBC*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.8.2.1.5, Table 4.8.2.1.5-1 MAC-MainConfig-RBC			
Information Element	**Value/remark**	**Comment**	**Condition**
MAC-MainConfig-RBC ::= SEQUENCE {			
ul-SCH-Config SEQUENCE {			
maxHARQ-Tx	n5		
periodicBSR-Timer	sf20		
retxBSR-Timer	sf1280		
ttiBundling	FALSE		
}			
drx-Config CHOICE {			
Setup SEQUENCE {			
onDurationTimer	psf1		
drx-InactivityTimer	psf1		
drx-RetransmissionTimer	psf1		
longDRX-CycleStartOffset CHOICE {		sf1280 typical value in real network for real-time services.	
sf1280	9		
}			
shortDRX	Not present		
}			
}			
timeAlignmentTimerDedicated	sf1280		
}			

Table 8.2.4.4.3-4: *PhysicalConfigDedicated-DEFAULT*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.8.2.1.6, Table 4.8.2.1.6-1 PhysicalConfigDedicated-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
PhysicalConfigDedicated-DEFAULT ::= SEQUENCE {			
…			
schedulingRequestConfig	SchedulingRequest-Config-DEFAULT		
}			

Table 8.2.4.4.3-5: *SchedulingRequest-Config-DEFAULT*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.3, Table 4.6.3-20 SchedulingRequest-Config-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequest-Config-DEFAULT ::= CHOICE {			
setup SEQUENCE {			
sr-PUCCH-ResourceIndex	41	10 MHz channel bandwidth parameter	
sr-ConfigIndex	2		
dsr-TransMax	n4		
}			
}			

Table 8.2.4.4.3-6: *ReportConfigEUTRA-A3*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-6 (-3 dB)	-3 is actual value in dB (-6 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			
}			

Table 8.2.4.4.3-7: *MeasResults*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.2.4.4.3-8: *MeasResultListEUTRA*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step6)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
measResult SEQUENCE {			
rsrpResult		Set according to specific test INTEGER(0..97)	
rsrqResult		Set according to specific test INTEGER(0..34)	
}			
}			

Table 8.2.4.4.3-9: *ReportConfigEUTRA-PERIODICAL*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step7)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-7 ReportConfigEUTRA-PERIODICAL			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-PERIODICAL ::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose	reportCGI		
}			
}			
reportAmount	1		
si-RequestForHO-r9	setup		
}			

Table 8.2.4.4.3-10: *MeasResultListEUTRA*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step10)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
cgi-Info SEQUENCE{			
cellGlobalId SEQUENCE{			
plmn-Identity	plmn-Identity		
cellIdentity	cellIdentity		
}			
trackingAreaCode			
plmn-IdentityList			
}			
}			

Table 8.2.4.4.3-11: *MeasObjectEUTRA-GENERIC*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-2 MeasObjectEUTRA-GENERIC			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-GENERIC(Freq) ::= SEQUENCE {			
cellForWhichToReportCGI	Physical Cell ID of Cell 2		Cell 1
}			

Table 8.2.4.4.3-12: *MeasConfig-DEFAULT*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step7)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1 MeasConfig-DEFAULT:			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId))OF SEQUENCE {	1 entry		
reportConfigId	idReportConfig-P		
reportConfig	ReportConfigEUTRA-PERIODICAL		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) of SEQUENCE {	1 entry		
measId	2		
measObjectId	IdMeasObject-f1		
reportConfigId	IdReportConfig-P		
}			
measGapConfig	Not present		
}			

Table 8.2.4.4.3-13: *MeasResults*: Additional E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step10)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	2	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

8.2.4.5 Test requirement

Tables 8.2.4.4.1-1, 8.2.4.5-1, 8.2.4.5-2 and 8.2.4.5-3 define the primary level settings including test tolerances for E-UTRAN TDD - TDD Intra-frequency identification of a new CGI of E-UTRA cell using autonomous gaps when DRX is used test.

Table 8.2.4.5-1: Cell Specific Test requirement 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 Number		1			1		
$BW_{channel}$	MHz	10			10		
OCNG Patterns defined in D.2.1 (OP.1 TDD) and in D.2.2 (OP.2 TDD)		OP.1 TDD	OP.1 TDD	OP.1 TDD	OP.2 TDD	OP.2 TDD	OP.2 TDD
PBCH_RA	dB	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						
$\hat{E}_s/I_{ot}$	dB	8	-3.33	-3.33	-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 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 8.2.4.5-2: 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 section 6.3.2 in 3GPP TS 36.331[5]
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table 8.2.4.5-3: *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 section 6.3.2 in 3GPP TS 36.331[5]
sr-ConfigIndex	2	For further information see section 6.3.2 in 3GPP TS 36.331[5] and section10.1 in 3GPP TS 36.213 [8]

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

The overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Test requirement = RRC Procedure delay + $T_{identify\_CGI, intra}$ + TTI insertion uncertainty

RRC procedure delay=15ms

$$T_{identify\_CGI, intra} = T_{basic\_identify\_CGI, intra} \quad ms$$

$T_{basic\_identify\_CGI,intra}$ = 150 ms

TTI insertion uncertainty = 2 ms

The overall delay measured is 167 ms, allow 170 ms.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.2.5 E-UTRAN TDD-TDD Intra-Frequency Event-Triggered Reporting under Time Domain Measurement Resource Restriction with Non-MBSFN ABS (eICIC)

Editor's notes: This test is incomplete. The following aspects are either missing or not yet determined:

- The test tolerances are undefined

8.2.5.1 Test purpose

To verify that the UE correctly detects and reports Event A3 (neighbour becomes offset better than PCell) defined in [5] under a time domain measurement resource restriction and non-MBSFN ABS configured in the aggressor cell.

8.2.5.2 Test applicability

This test applies to all types of E-UTRA TDD UE release 10 and forward. Applicability requires support for FGI bit 115.

8.2.5.3 Minimum conformance requirements

When no DRX is in use the UE shall be able to identify a new detectable TDD intra-frequency cell within

$$T_{identify\_intra\_eICIC} = T_{basic\_identify\_E\text{-}UTRA\_TDD\_eICIC, intra} \cdot \frac{T_{Measurement\_Period\_eICIC, Intra}}{T_{Intra}} \quad ms$$

where

$T_{basic\_identify\_E\text{-}UTRA\_TDD\_eICIC, intra}$ 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 TS 36.133 [4] clauses 9.1.2.3 and 9.1.2.4 and RSRQ related side conditions given in TS 36.133 [4] 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 $Y_{measurement\_intra\_eICIC}$ cells , where $Y_{measurement\_intra\_eICIC}$ is defined in the following equation. If the UE has identified more than $Y_{measurement\_intra\_eICIC}$ 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.

$$Y_{measurement\_intra\_eICIC} = Floor\left\{ X_{basic\_measurement\_TDD\_eICIC} \cdot \frac{T_{Intra}}{T_{Measurement\_Period\_eICIC,\ Intra}} \right\} \text{ cells}$$

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 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 above. 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 above 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 $T_{measure\_intra\_eICIC}$ 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, an additional delay can be expected.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.8.2 and A.8.2.5.

8.2.5.4 Test description

8.2.5.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator), faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A Figure A.15.

2. The general test parameter settings are set up according to Table 8.2.5.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.2.5.4.3.

5. At this stage only Cell 1 is switched on. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1.

Table 8.2.5.4.1-1: General test parameters for E-UTRAN TDD-TDD intra-frequency event-triggered reporting under time domain measurement resource restriction with Non-MBSFN ABS (eICIC)

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.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 C.3.1.1.1-1
E-UTRA RF Channel Number		1	One TDD carrier frequency is used.
Channel Bandwidth ($BW_{channel}$)	MHz	10	
A3-Offset	dB	[-11]	
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		3 μs	Synchronous cells
T1	s	5	
T2	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, 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 20 = 0. No MBSFN subframes are configured in the ABS subframes.
Time domain measurement resource restriction pattern for neighbour cell measurements on RF Channel 1		'00000000010000000001'	Time domain measurement resource restriction pattern for neighbour 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		'10000000001000000000'	Configured during T1 for Cell 1 measurements

8.2.5.4.2 Test procedure

There are two synchronous E-UTRA cells in the test on the same RF channel. Cell 1 is the Pcell and also the aggressor cell, Cell 2 is the neighbour victim cell to be identified. Non-MBSFN ABS pattern is configured for aggressor cell (Cell 1). The UE is configured with a time domain measurement resource restriction pattern for performing E-UTRAN FDD intra-frequency measurements on neighbour cells (Cell 2). The UE is also configured with a time domain measurement resource restriction pattern for PCell (Cell 1) measurements. 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 on Cell 2. The information for both measurement patterns shall be provided to the UE during T1.

1. Ensure the UE is in State 3A-RF in Cell 1 according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters for both Cell 1 and Cell 2 according to T1 in Table 8.2.5.5-1. Propagation conditions are set according to Annex B clause B.2.2. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.2.5.5-1.

6. UE shall transmit a MeasurementReport message triggered by Event A3. If the overall delays measured from the beginning of time period T2 is less than 1002 ms then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with UE-Identity) for the UE and ensures the UE is in State 3A in Cell 1 according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF in Cell 1 according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF in Cell 1 according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.2.5.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.2.5.4.3-1: Common Exception messages for E-UTRAN TDD-TDD intra-frequency event-triggered reporting under time domain measurement resource restriction with Non-MBSFN ABS (eICIC)

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-2 Table H.3.1-7

Table 8.2.5.4.3-2: *ReportConfigEUTRA-A3*: Additional E-UTRAN TDD-TDD intra-frequency event-triggered reporting under time domain measurement resource restriction with Non-MBSFN ABS (eICIC)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-22 (-11 dB)	-11 is actual value in dB (-22 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
Hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			

Table 8.2.5.4.3-3: *MeasResults*: Additional E-UTRAN TDD-TDD intra-frequency event-triggered reporting under time domain measurement resource restriction with Non-MBSFN ABS (eICIC)

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults::= SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {		Report Cell 1	
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.2.5.4.3-4: *MeasResultListEUTRA*: Additional E-UTRAN TDD-TDD intra-frequency event-triggered reporting under time domain measurement resource restriction with Non-MBSFN ABS (eICIC)

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultLIstEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 2	
physCellId	PhysCellId of the Cell 2		
measResult SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
}			

Table 8.2.5.4.3-5: MeasObjectEUTRA-GENERIC: Additional E-UTRAN TDD-TDD intra-frequency event-triggered reporting under time domain measurement resource restriction with Non-MBSFN ABS (eICIC)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-2 MeasObjectEUTRA-GENERIC			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-GENERIC(Freq) ::= SEQUENCE {			
measSubframePatternConfigNeigh-r10 CHOICE {			
setup SEQUENCE {			
measSubframePatternNeigh-r10 CHOICE {			
subframePatternTDD-r10			
subframeConfig1-5-r10	‘00000000010000000001‘	BIT STRING (SIZE (20))	Cell1
}			
measSubframeCellList-r10 SEQUENCE {			
start	Physical Cell ID of Cell 2		
range	Not present		
}			
}			
}			
}			

Table 8.2.5.4.3-6: *RadioResourceConfigDedicated-SRB2-DRB:* Additional E-UTRAN TDD-TDD intra-frequency event-triggered reporting under time domain measurement resource restriction with Non-MBSFN ABS (eICIC)

Derivation Path: TS 36.508 [7] clause 4.6.3, Table 4.6.3-16 RadioResourceConfigDedicated-SRB2-DRB(n,m)			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated-SRB2-DRB(n, m) ::= SEQUENCE {			
MeasSubframePatternPCell-r10 CHOICE {			
setup SEQUENCE {			
subframePatternTDD-r10			
subframeConfig1-5-r10	‘00000000010000000001’	BIT STRING (SIZE (20))	
}			
}			
}			

8.2.5.5 Test requirements

Table 8.2.5.5-1: Cell specific test requirement parameters for E-UTRAN TDD-TDD Intra-Frequency Event-Triggered Reporting under Time Domain Measurement Resource Restriction with Non-MBSFN ABS (eICIC)

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
E-UTRA RF Channel Number		1		1	
$BW_{channel}$	MHz	10		10	
OCNG Pattern defined in D.2.1 (OP.1 TDD) and in D.2.2 (OP.2)		OP.1 TDD		OP.2 TDD	
PBCH_RA	dB	Non-ABS and ABS subframe channel powers defined in Table C.3.1.1.1-1.		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				
N_{oc} Note 3	dBm/15 kHz	-98			
$(\hat{E}_s / N_{oc})_{meas}$ Note 5	dB	1+TT	1+TT	-Infinity	-4+TT
$(\hat{E}_s / N_{oc})_{ABS}$	dB	1+TT	1+TT	N/A	N/A
RSRP Note 4,5	dBm/15 kHz	-97+TT	-97+TT	-Infinity	-102+TT
SCH_RP Note 4	dBm/15 kHz	-97+TT	-97+TT	-Infinity	-102+TT
CRS $\hat{E}_s / I_{ot}$	dB	1+TT	-0.5+TT	-Infinity	-7.5+TT
SCH $\hat{E}_s / I_{ot}$	dB	1+TT	1+TT	-Infinity	-4+TT
Propagation Condition		ETU30			

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. 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.

The overall delays measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event A3 triggered measurement report to Cell 2.

The overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify\_intra\_eICIC}$

$$T_{identify\_intra\_eICIC} = T_{basic\_identify\_E\text{-}UTRA\_TDD\_eICIC,intra} \cdot \frac{T_{Measurement\_Period\_eICIC,Intra}}{T_{Intra}} \quad ms$$

$T_{basic\_identify\_E\text{-}UTRA\_TDD\_eICIC,\,intra} = 1000$ ms

$T_{Measurement\_Period\_eICIC,\,Intra} = 200$ ms

$T_{Intra} = 200$ ms

TTI insertion uncertainty = 2 ms

The overall delays measured shall be less than a total of 1002 ms in this test case (note: this gives a total of 1000 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.3 E-UTRAN FDD-FDD Inter-frequency Measurements

8.3.1 E-UTRAN FDD-FDD Inter-frequency event triggered reporting under fading propagation conditions in asynchronous cells

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined
- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.3.1.1 Test purpose

To verify the UE's ability to make a correct reporting of an event under fading propagation conditions in asynchronous cells within the E-UTRA FDD inter-frequency cell search requirements. This test will partly verify the FDD-FDD inter-frequency cell search requirements in section 8.1.2.3.

8.3.1.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 8 and forward. Applicability requires support for FGI bit 25.

8.3.1.3 Minimum conformance requirements

When measurement gaps are scheduled the UE shall be able to identify a new FDD inter-frequency within $T_{Identify\_Inter}$ according to the following expression:

$$T_{Identify\_Inter} = T_{Basic\_Identify\_Inter} \cdot \frac{480}{T_{Inter1}} \cdot N_{freq} \quad ms$$

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_{freq} is defined in TS 36.133 [4] section 8.1.2.1.1 and T_{Inter1} is defined in TS36.133 [4] section 8.1.2.1.

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP and RSRP Ês/Iot according to Annex I.2.3 for a corresponding Band,
- other RSRP related side conditions given in Sections 9.1.3.1 and 9.1.3.2 and RSRQ related side conditions given in Sections 9.1.6.1 and 9.1.6.2 are fulfilled,

- $SCH\_RP|_{dBm}$ and SCH Ês/Iot according to Annex I.2.3 for a corresponding Band.

When measurement gaps are scheduled for FDD inter frequency measurements the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with measurement accuracy as specified in TS 36.133 sub-clauses 9.1.3.1, 9.1.3.2, 9.1.6.1, and 9.1.6.2, respectively, with measurement period given by table 8.3.1.3-1.

Table 8.3.1.3-1: Measurement period and measurement bandwidth

Configuration	Physical Layer Measurement period: $T_{Measurement\_Period\_Inter\_FDD}$ [ms]	Measurement bandwidth [RB]
0	480 x N_{freq}	6
1 (Note)	240 x N_{freq}	50
Note: This configuration is optional.		

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 inter-frequency cells per FDD inter-frequency and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period defined in Table 8.3.1.3-1.

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] clauses 9.1.3.1, 9.1.3.2, 9.1.6.1, and 9.1.6.2, 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 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 TS 36.133 [4] clause 8.1.2.3.1.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify\_intra}$ defined in TS 36.133 [4] section 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 an additional delay can be expected

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.3.1 and A.8.3.1.

8.3.1.4 Test description

8.3.1.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.15.

2. The general test parameter settings are set up according to Table 8.3.1.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.3.1.4.3.

5. There are two E-UTRA FDD carriers and two cells specified in the test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.3.1.4.1-1: 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 section A.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.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 3GPP TS 36.133 section 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	ms	3	Asynchronous cells 3ms or 92160*Ts
T1	s	5	
T2	s	5	

8.3.1.4.2 Test procedure

The test consists of two successive time periods, with time durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. Gap pattern configuration is configured before T2 begins to enable inter-frequency monitoring.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
2. Set the parameters according to T1 in Table 8.3.1.5-1. Propagation conditions are set according to Annex B clauses B.1.1 and B.2.2. T1 starts.
3. SS shall transmit an RRCConnectionReconfiguration message.
4. The UE shall transmit RRCConnectionReconfigurationComplete message.
5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.3.1.5-1.
6. UE shall transmit a MeasurementReport message triggered by Event A3. If the measurement reporting delay from the beginning of time period T2 is less than 3842ms the number of successful tests is increased by one. If the UE fails to report the event within the measurement reporting delay requirement then the number of failure tests is increased by one.
7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit a RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.
8. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.
9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with UE-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.3.1.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.3.1.4.3-1: Common Exception messages for E-UTRAN FDD-FDD intra frequency event triggered reporting under fading propagation conditions in synchronous cells test requirement

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-7 Table H.3.1-9

Table 8.3.1.4.3-2: *ReportConfigEUTRA-A3*: Additional E-UTRAN FDD-FDD inter frequency event triggered reporting under fading propagation conditions in asynchronous cells test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12 (-6 dB)	-6 is actual value in dB (-12 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
Hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			

Table 8.3.1.4.3-3: *MeasResults*: Additional E-UTRAN FDD-FDD inter frequency event triggered reporting under fading propagation conditions in asynchronous cells test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId			
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.3.1.4.3-4: *MeasResultListEUTRA*: Additional E-UTRAN FDD-FDD inter frequency event triggered reporting under fading propagation conditions in asynchronous cells test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
measResult SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
}			

8.3.1.5 Test requirement

Tables 8.3.1.4.1-1 and 8.3.1.5-1 define the primary level settings including test tolerances for event triggered reporting under fading propagation conditions in asynchronous inter frequency cells test.

Table 8.3.1.5-1: Cell specific test requirement parameters for E-UTRAN FDD-FDD inter 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 Number		1		2	
$BW_{channel}$	MHz	10		10	
OCNG Patterns defined in D.1.1 (OP.1 FDD) and in D.1.2 (OP.2 FDD)		OP.1 FDD		OP.2 FDD	
PBCH_RA	dB	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				

N_{oc} Note 3	dBm/15 kHz	-98			
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-90.70
$\hat{E}_s/I_{ot}$	dB	4	4	-Infinity	7.30
SCH_RP	dBm/15 kHz	-94	-94	-Infinity	-90.70
$\hat{E}_s/N_{oc}$	dB	4	4	-Infinity	7.30
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 fulfilled. Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.					

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 3842 ms from the beginning of time period T2.

The overall delays measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event A3 triggered measurement report to Cell 2.

The overall delays measured in the test may be up to 2xTTI$_{DCCH}$ higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = 3840 ms

TTI insertion uncertainty = TTI$_{DCCH}$ = 1 ms; 2xTTI$_{DCCH}$ = 2 ms

The overall delays measured shall be less than a total of 3842 ms in this test case (note: this gives a total of 3840 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

The rate of correct events observed during repeated tests shall be at least 90% with a confidence level of 95%.

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.

8.3.2 E-UTRAN FDD-FDD Inter-frequency event triggered reporting when DRX is used under fading propagation conditions in asynchronous cells

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined
- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.3.2.1 Test purpose

To verify the UE's ability to make a correct reporting of an event in DRX under fading propagation conditions in asynchronous cells within the E-UTRA FDD-FDD inter frequency cell search requirements.

8.3.2.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 8 and forward. Applicability requires support for FGI bits 5, and 25.

8.3.2.3 Minimum conformance requirements

When measurement gaps are scheduled the UE shall be able to identify a new FDD inter-frequency within $T_{Identify\_Inter}$ as shown in table 8.3.2.3-1:

Table 8.3.2.3-1: Requirement to identify a newly detectable FDD inter-frequency cell

DRX cycle length (s)	$T_{identify\_inter}$ (s) (DRX cycles)	
	Gap period = 40 ms	Gap period = 80 ms
≤0.16	Non DRX Requirements in TS 36.133 [4] clause 8.1.2.3.1.1 are applicable	Non DRX Requirements in TS 36.133 [4] clause 8.1.2.3.1.1 are applicable
0.256	$5.12*N_{freq}$ ($20*N_{freq}$)	$7.68*N_{freq}$ ($30*N_{freq}$)
0.32	$6.4*N_{freq}$ ($20*N_{freq}$)	$7.68*N_{freq}$ ($24*N_{freq}$)
0.32 < DRX-cycle ≤ 2.56	Note ($20*N_{freq}$)	Note ($20*N_{freq}$)
Note: Time depends upon the DRX cycle in use		

The non DRX requirements in TS 36.133 [4] clause 8.1.2.3.1.1 states that when measurement gaps are scheduled the UE shall be able to identify a new FDD inter-frequency within $T_{Identify\ Inter}$ according to the following expression:

$$T_{Identify\_Inter} = T_{Basic\_Identify\_Inter} \cdot \frac{480}{T_{Inter1}} \cdot N_{freq} \quad ms$$

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_{freq} is defined in TS 36.133 [4] section 8.1.2.1.1 and T_{Inter1} is defined in TS36.133 [4] section 8.1.2.1.

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP and RSRP Ês/Iot according to Annex I.2.3 for a corresponding Band,
- other RSRP related side conditions given in Sections 9.1.3.1 and 9.1.3.2 and RSRQ related side conditions given in Sections 9.1.6.1 and 9.1.6.2 are fulfilled,
- $SCH\_RP|_{dBm}$ and SCH Ês/Iot according to Annex I.2.3 for a corresponding Band.

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 inter-frequency cells per FDD inter-frequency and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period defined in Table 8.3.2.3-2.

Table 8.3.2.3-2: Requirement to measure FDD inter-frequency cells

DRX cycle length (s)	$T_{measure\_inter}$ (s) (DRX cycles)
≤0.08	Non DRX Requirements in TS 36.133 [4] clause 8.1.2.3.1.1 are applicable
0.08 < DRX-cycle ≤ 2.56	Note ($5*N_{freq}$)
Note: Time depends upon the DRX cycle in use	

The RSRP measurement accuracy for all measured cells shall be as specified in TS 36.133 [4] clauses 9.1.3.1 and 9.1.3.2, and 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.

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] clauses 9.1.3.1, 9.1.3.2, 9.1.6.1, and 9.1.6.2, 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 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 TS 36.133 [4] clause 8.1.2.2.1.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify\_intra}$ defined in TS 36.133 [4] section 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 an additional delay can be expected

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.3.1 and A.8.3.2.

8.3.2.4 Test description

8.3.2.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.15.

2. The general test parameter settings are set up according to Table 8.3.2.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.3.2.4.3.

5. There are two E-UTRA FDD carrier and two cells specified in the test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.3.2.4.1-1: General Test Parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used under fading propagation conditions in asynchronous cells

Parameter	Unit	Test 1	Test 2	Comment
		Value		
PDSCH parameters		DL Reference Measurement Channel R.0 FDD		As specified in section A.1.1 Note that UE may only be allocated at *On Duration*
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD		As specified in section A.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 3GPP TS 36.133 section 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 8.3.2.5-2
Time offset between cells		3 ms		Asynchronous cells 3ms or 92160*Ts
T1	s	5		
T2	s	5	30	

8.3.2.4.2 Test procedure

The test consists of one active cell and one neighbour cell. 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 durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

In Test 1 when DRX = 40 ms is used, UE needs to be provided at least once every 500 ms with new Timing Advance Command MAC control element to restart the Timer Alignment Timer to keep the UE uplink time alignment. Furthermore, the UE is allocated with PUSCH resource at every DRX cycle. In Test 2 when DRX = 1280 ms is used, the uplink time alignment is not maintained and the UE needs to use RACH to obtain uplink allocation for measurement reporting.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table 8.3.2.5-1. Propagation conditions are set according to Annex B clauses B.1.1 and B.2.2. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.3.2.5-1.

6. UE shall transmit a MeasurementReport message triggered by Event A3. If the overall delays measured from the beginning of time period T2 is less than 3882 ms for Test 1 or less than 26882 ms for Test 2 then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with UE-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

11. Repeat step 1-10 for each sub-test in Table 8.3.2.4.1-1 as appropriate.

8.3.2.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.3.2.4.3-1: Common Exception messages for E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions test 1 and 2 requirements

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-7 Table H.3.1-9 Table H.3.7-1 Table H.3.7-2 Table H.3.7-3

Table 8.3.2.4.3-2: *RRCConnectionReconfiguration*: Additional E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions test 1 and 2 requirement

Derivation Path: TS 36.508 [7] clause 4.6.1, Table 4.6.1-8 RRCConnectionReconfiguration			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier-DL		
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
measConfig	MeasConfig -DEFAULT		
radioResourceConfigDedicated	RadioResourceConfigDedicated-HO		
}			
}			
}			
}			

Table 8.3.2.4.3-3: *ReportConfigEUTRA-A3*: Additional E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions test 1 and 2 requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventide CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12 (-6 dB)	-6 is actual value in dB (-12 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
Hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			

Table 8.3.2.4.3-4: *SchedulingRequest-Config-DEFAULT*: Additional E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions test 1 and 2 requirements

Derivation Path: TS 36.508 [7] clause 4.6.3, Table 4.6.3-20 SchedulingRequest-Config-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequest-Config-DEFAULT ::= CHOICE {			
setup SEQUENCE {			
sr-PUCCH-ResourceIndex	41	10 MHz channel bandwidth parameter	
sr-ConfigIndex	0		
dsr-TransMax	n4		
}			
}			

Table 8.3.2.4.3-5: *MeasResults*: Additional E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions test 1 and 2 requirements

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.3.2.4.3-6: *MeasResultListEUTRA*: Additional E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions test 1 and 2 requirements

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultEUTRA {			
physCellId	PhysCellId		
measResult SEQUENCE {			
rsrpResult		Set according to specific test INTEGER(0..97)	
rsrqResult		Set according to specific test INTEGER(0..34)	
}			
}			

Table 8.3.2.4.3-7: *PRACH-Config-DEFAULT*: Additional E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions test 1 and 2 requirements

Derivation Path: TS 36.508 [7] clause 7.3.2 Table 7.3.2-1			
Information Element	**Value/remark**	**Comment**	**Condition**
PRACH-Config-DEFAULT ::= SEQUENCE {			
prach-ConfigIndex	4		
}			

8.3.2.5 Test requirement

Tables 8.3.2.4.1-1, 8.3.2.5-1, 8.3.2.5-2 and 8.3.2.5-3 define the primary level settings including test tolerances for E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used under fading propagation conditions in asynchronous cells test.

Table 8.3.2.5-1: Cell Specific Test Parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
E-UTRA RF Channel Number		1		2	
$BW_{channel}$	MHz	10		10	
OCNG Patterns defined in D.1.1 (OP.1 FDD) and in D.1.2 (OP.2 FDD)		OP.1 FDD		OP.2 FDD	
PBCH_RA	dB	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				

N_{oc} Note 2	dBm/15 kHz	-98			
RSRP Note 3	dBm/15 kHz	-94	-94	-Infinity	-90.70
$\hat{E}_s/I_{ot}$	dB	4	4	-Infinity	7.30
SCH_RP Note 3	dBm/15 kHz	-94	-94	-Infinity	-90.70
$\hat{E}_s/N_{oc}$	dB	4	4	-Infinity	7.30
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: 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 8.3.2.5-2: 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 Value	Test2 Value	Comment
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	
Note: For further information see section 6.3.2 in 3GPP TS 36.331 [5].			

Table 8.3.2.5-3: *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 Value	Test2 Value	Comment
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331 [5].
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213 [8].

In Test 1 when DRX cycle length = 40 ms is used, the overall delays measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event A3 triggered measurement report to Cell 2 on PUSCH.

In Test 2 when DRX cycle length = 1280 ms is used, the overall delays measured is defined as the time from the beginning of time period T2, to the moment the UE starts to send preambles on the PRACH for Scheduling Request (SR) to obtain allocation to send the measurement report to Cell 2 on PUSCH.

For both tests:

The overall delay measured may be up to 2xTTI_{DCCH} higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

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.

The overall delay measured when DRX cycle length is 40 ms test requirement is expressed as:

Overall delay measured = measurement reporting delay + TTI insertion uncertainty+ DRX cycle length

Measurement reporting delay = $T_{Identify\_Inter}$

$$T_{Identify\_Inter} = T_{Basic\_Identify\_Inter} \cdot \frac{480}{T_{Inter1}} \cdot N_{freq} \quad ms$$

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.

T_{Inter1} = 60 ms. It is defined in table 8.1.2.1-1 of TS36.133 [4] clause 8.1.2.1.

N_{freq} = 1. It is defined in TS 36.133 [4] clause 8.1.2.1.1.

TTI insertion uncertainty = 2 ms

DRX cycle length = 40 ms

The overall delays measured when DRX cycle length is 40 ms shall be less than a total of 3882 ms.

The overall delay measured when DRX cycle length is 1280 ms test requirement is expressed as:

Overall delay measured = measurement reporting delay + TTI insertion uncertainty + DRX cycle length

Measurement reporting delay = $T_{identify\_inter}$

$T_{identify\_inter}$ = 25600 ms. When DRX cycle length is 1280 ms then the $T_{identify\_inter}$ is 20 x 1280 ms, as defined in Table 8.3.2.3-1.

TTI insertion uncertainty = 2 ms

DRX cycle length = 1280 ms

The overall delays measured when DRX cycle length is 1280 ms shall be less than a total of 26882 ms.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

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

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined
- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.3.3.1 Test purpose

To verify the UE's ability to make a correct reporting of an event in DRX when L3 filtering is used in AWGN propagation conditions in asynchronous cells within the E-UTRA FDD-FDD inter frequency cell search in DRX requirements and the UE behaviour with the filterCoefficent.

8.3.3.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 8 and forward. Applicability requires support for FGI bits 5, and 25.

8.3.3.3 Minimum conformance requirements

When DRX is in use the UE shall be able to identify a new detectable FDD inter frequency cell within $T_{identify\ inter}$ as defined in table 8.1.2.3.1.2-1 of TS 36.133 [4] clause 8.1.2.3.1.2.

A cell shall be considered detectable when

- RSRP and RSRP Ês/Iot according to Annex I.2.3 for a corresponding Band,
- other RSRP related side condition given in TS 36.133 [4] clauses 9.1.3.1 and 9.1.3.2 and RSRQ related side conditions given in Sections 9.1.6.1 and 9.1.6.2 are fulfilled,
- $SCH\_RP|_{dBm}$ and SCH Ês/Iot according to Annex I.2.3 for a corresponding Band.

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 inter-frequency cells per FDD inter-frequency and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period defined in table 8.3.3.3-1.

Table 8.3.3.3-1: Requirement to measure FDD inter frequency cells

DRX cycle length (s)	$T_{measure\_inter}$ (s) (DRX cycles)
≤0.08	Non DRX Requirements in section 8.1.2.3.1.1 in 3GPP TS 36.133 [4] are applicable
0.08<DRX-cycle≤2.56	Note ($5*N_{freq}$)
Note: Time depends upon the DRX cycle in use	

The RSRP measurement accuracy for all measured cells shall be as specified in TS 36.133 [4] clauses 9.1.3.1 and 9.1.3.2, and 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.

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] clauses 9.1.3.1, 9.1.3.2, 9.1.6.1, and 9.1.6.2, 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 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 TS 36.133 [4] clause 8.1.2.3.1.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify\_inter}$ defined in TS 36.133 [4] clause 8.1.2.3.1.1 and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than $T_{Measurement\_Period\ Inter}$ defined in TS 36.133 [4] clause 8.1.2.3.1.1 provided the timing to that cell has not changed more than ± 50 Ts while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.3.1 and A.8.3.3.

8.3.3.4 Test description

8.3.3.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.14.

2. The general test parameter settings are set up according to Table 8.3.3.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.3.3.4.3.

5. There is one E-UTRA FDD carrier and two cells specified in the test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.3.3.4.1-1: General Test Parameters for E-UTRAN FDD-FDD 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 Channel R.0 FDD	As specified in section A.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.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 3GPP TS 36.133 [4] section 8.1.2.1
Neighbour A3-Offset Ofn	dB	-14	
CP length		Normal	
Hysteresis	dB	0	
Time To Trigger	dB	0	
Filter coefficient		9	L3 filtering is used
DRX		ON	DRX related parameters are defined in Table 8.3.3.5-2
Time offset between cells		3 ms	Asynchronous cells
T1	s	30	
T2	s	9	

8.3.3.4.2 Test procedure

The test consists of one active cell and one neighbour cell. 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 durations of T1 and T2 respectively.

In the Test when DRX = 1280 ms is used, a non-zero L3 filtering is configured. The uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table 8.3.3.5-1. Propagation conditions are set according to Annex B clause B.1.1. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. During T1 the SS continuously checks the absence of an A3 triggered measurement report from the neighbour cell. If the UE does not send this during T1, then count neither success nor fail. If the UE sends such a report, then count a fail. Upon a fail in step 5, neither success nor fail are counted in step 7.

6. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.3.3.5-1 and 8.3.3.5-2.

7. UE shall transmit a MeasurementReport message triggered by Event A3. If the overall delays measured from the beginning of time period T2 is less than 7682 ms then the number of "successes" is increased by one, otherwise count a fail.

8. After the SS receive the MeasurementReport message in step 7) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

9. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

10. After the RRC connection release, the SS:
- transmits in Cell 1 a Paging message (including PagingRecord with UE-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
or
- switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

11. Repeat step 2-10 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

12. Repeat step 1-11 for each sub-test in Table 8.3.3.4.1-1 as appropriate.

8.3.3.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.3.3.4.3-1: Common Exception messages for E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used in test requirement

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-3 Table H.3.7-2 Table H.3.7-3

Table 8.3.3.4.3-2: *RRCConnectionReconfiguration*: Additional E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used in test requirement

Derivation Path: TS 36.508 [7] clause 4.6.1, Table 4.6.1-8 RRCConnectionReconfiguration			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier-DL		
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
measConfig	MeasConfig -DEFAULT		
radioResourceConfigDedicated	RadioResourceConfigDedicated-HO		
}			
}			
}			
}			

Table 8.3.3.4.3-3: *ReportConfigEUTRA-A3*: Additional E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used in test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventid CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	0 (0 dB)	The actual value is IE value * 0.5 dB IE Value INTEGER (-30.. 30)	
reportOnLeave	FALSE		
}			
}			
hysteresis	0 (0 dB)	The actual value is IE value * 0.5 dB	
timeToTrigger	0 (0 ms)		
}			
}			

Table 8.3.3.4.3-4: *SchedulingRequest-Config-DEFAULT*: Additional E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used test requirement

Derivation Path: TS 36.508 [7] clause 4.6.3, Table 4.6.3-20 SchedulingRequest-Config-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequest-Config-DEFAULT ::= CHOICE {			
setup SEQUENCE {			
sr-PUCCH-ResourceIndex	41	10 MHz channel bandwidth parameter	
sr-ConfigIndex	0		
dsr-TransMax	n4		
}			
}			

Table 8.3.3.4.3-5: *MeaResults*: Additional E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.3.3.4.3-6: *MeasResultListEUTRA*: Additional E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultEUTRA {			
physCellId	PhysCellId		
measResult SEQUENCE {			
rsrpResult		Set according to specific test INTEGER(0..97)	
rsrqResult		Set according to specific test INTEGER(0..34)	
}			
}			

Table 8.3.3.4.3-7: *FilterCoefficient*: Additional E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
filterCoefficient	fc9		

Table 8.3.3.4.3-8: *MeasObjectEUTRA-GENERIC(Freq)*: Additional E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-2 MeasObjectEUTRA-GENERIC(Freq)			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-GENERIC(Freq) ::= SEQUENCE {			
carrierFreq	Downlink EARFCN for Freq		
allowedmeasBandwidth	The number of the resource blocks for Freq		
presenceAntennaPort1	FALSE		
neighCellConfig	'10'B (The MBSFN subframe allocations of all neighbour cells are identical to or subsets of that in the serving cells)		
offsetFreq	-14 (dB-14)	-14 dB is actual value in dB (Value dB-14 corresponds to -14 dB)	
cellsToRemoveList	Not present		
cellsToAddModList	Not present		
blackCellsToRemoveList	Not present		
blackCellsToAddModList	Not present		
cellForWhichToReportCGI	Not present		
}			

8.3.3.5 Test requirement

Tables 8.3.3.4.1-1, 8.3.3.5-1, 8.3.3.5-2 and 8.3.3.5-3 define the primary level settings including test tolerances for E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions in asynchronous cells with DRX when L3 filtering is used test.

Table 8.3.3.5-1: Cell Specific Test Parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
E-UTRA RF Channel Number		1		2	
$BW_{channel}$	MHz	10		10	
OCNG Patterns defined in D.1.1 (OP.1 FDD) and in D.1.2 (OP.2 FDD)		OP.1 FDD		OP.2 FDD	
PBCH_RA	dB	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				
$\hat{E}_s/I_{ot}$	dB	4.00	1.80	4.00	24.00
N_{oc} Note 2	dBm/15 KHz	-96.90	-96.90	-98.00	-98.00
$\hat{E}_s/N_{oc}$	dB	4.00	1.80	4.00	24.00
RSRP Note 3	dBm/15 KHz	-92.90	-95.10	-94.00	-74.00
SCH_RP Note 3	dBm/15 KHz	-92.90	-95.10	-94.00	-74.00
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 8.3.3.5-2: DRX-Configuration to be used in E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used

Field	Value	Comment
onDurationTimer	psf1	As specified in section 6.3.2 in 3GPP TS 36.331 [5].
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table 8.3.3.5-3: *TimeAlignmentTimer* and *sr-ConfigIndex*-Configuration to be used in E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used

Field	Value	Comment
TimeAlignmentTimer	sf500	As specified in section 6.3.2 in 3GPP TS 36.331 [5].
sr-ConfigIndex	0	For further information see section 6.3.2 in 3GPP TS 36.331 [5] and section 10.1 in 3GPP TS 36.213 [8].

The overall delay measured is defined as the time from the beginning of time period T2, to the moment the UE starts to send preambles on the PRACH for Scheduling Request (SR) to obtain allocation to send the measurement report to Cell 2 on PUSCH.

The overall delay measured may be up to 2xTTI_{DCCH} higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

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.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled. The overall delay measured when DRX cycle length is 1280 ms test requirement is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty + DRX cycle length

Measurement reporting delay = $T_{measure\_inter}$

$T_{measure\_inter}$ = 6400 ms. When DRX cycle length is 1280 ms then the $T_{measure\_inter}$ is 5 x 1280 ms, as defined in Table 8.3.3.3-1.

TTI insertion uncertainty = 2 ms

DRX cycle length = 1280 ms

The overall delay measured when DRX cycle length is 1280 ms shall be less than a total of 7682 ms.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.3.4 E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

8.3.4.1 Test purpose

To verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps.

8.3.4.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 9 and forward with support of inter-frequency SI acquisition for HO.

8.3.4.3 Minimum conformance requirements

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 section 5.5.3.1 of TS 36.331 [5]. 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 E-UTRA cell within:

$$T_{identify\_CGI,\,inter} = T_{basic\_identify\_CGI,\,inter} \quad ms$$

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.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in TS36.133[4] Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP$|_{dBm}$ and SCH Ês/Iot according to Annex I.2.3 for a corresponding Band

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 3GPP TS 36.331 [5] are used.

Given that continuous DL data allocation and no DRX is used, and no measurement gaps are configured, the UE shall have more than 60 ACK/NACKs transmitted during the identification of a new CGI of E-UTRA cell.

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.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.3.5 and A.8.3.4.

8.3.4.4 Test description

8.3.4.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.14.
2. The general test parameter settings are set up according to Table 8.3.4.4.1-1.
3. Propagation conditions are set according to Annex B clauses B.0.
4. Message contents are defined in clause 8.3.4.4.3.
5. There are two E-UTRA FDD carriers and two cells specified in the test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.3.4.4.1-1: 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 section A.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.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 3GPP TS 36.133[4] 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 section 5.5.3.1 in TS 36.331[5].
Time offset between cells	ms	3	Asynchronous cells
T1	s	5	
T2	s	≤10	
T3	s	5	

8.3.4.4.2 Test procedure

The test comprises of one active cell and one neighbour cell. 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. Gap pattern configuration is configured before T2 begins to enable inter-frequency monitoring. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
2. Set the parameters according to T1 in Table 8.3.4.5-1. Propagation conditions are set according to Annex B clauses B.1.1. T1 starts.
3. SS shall transmit an RRCConnectionReconfiguration with event A3 configured message.
4. The UE shall transmit RRCConnectionReconfigurationComplete message.
5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.3.4.5-1.
6. UE shall transmit a MeasurementReport message triggered by Event A3.
7. SS shall transmit an RRCConnectionReconfiguration message during period T2, The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE.
8. The SS shall start T3 timer when the last TTI containing the RRC message implying SI reading is sent to UE.
9. The UE shall transmit RRCConnectionReconfigurationComplete message
10. UE shall transmit a MeasurementReport message containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3. 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. If the overall delays measured from the beginning of time period T3 is less than 170 ms, and the UE have more than 80 ACK/NACKs transmitted from the start of T3 until 170 ms, then the number of successful tests is increased by one. If the UE fails to report the cell global identifier within the overall delays measured requirement, or the UE have less than 80 ACK/NACKs transmitted from the start of T3 until 170 ms, then the number of failure tests is increased by one.
11. After the SS receive the MeasurementReport message in step 10) or when T3 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.
12. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.
13. After the RRC connection release, the SS:
    - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
    or
    - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
14. Repeat step 2-13 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.3.4.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.3.4.4.3-1: Common Exception messages for E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-7 Table H.3.1-9

Table 8.3.4.4.3-2: *ReportConfigEUTRA-A3*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12 (-6 dB)	-6 is actual value in dB (-12 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			
}			

Table 8.3.4.4.3-3: *MeasResults*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.3.4.4.3-4: *MeasResultListEUTRA*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step6)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
measResult SEQUENCE {			
rsrpResult		Set according to specific test INTEGER(0..97)	
rsrqResult		Set according to specific test INTEGER(0..34)	
}			
}			

Table 8.3.4.4.3-5: *ReportConfigEUTRA-PERIODICAL*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step7)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-7 ReportConfigEUTRA-PERIODICAL			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-PERIODICAL ::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose	reportCGI		
}			
}			
reportAmount	1		
si-RequestForHO-r9	setup		
}			

Table 8.3.4.4.3-6: MeasGapConfig- Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step7)

Derivation Path: 36.331, clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasGapConfig ::= CHOICE {			
release	NULL		
}			

Table 8.3.4.4.3-7: *MeasResultListEUTRA*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step10)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
cgi-Info SEQUENCE{			
cellGlobalId SEQUENCE{			
plmn-Identity	plmn-Identity		
cellIdentity	cellIdentity		
}			
trackingAreaCode			
plmn-IdentityList			
}			
}			

Table 8.3.4.4.3-8: *MeasObjectEUTRA-GENERIC*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-2 MeasObjectEUTRA-GENERIC			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-GENERIC(Freq) ::= SEQUENCE {			
neighCellConfig	'00'B (Not all neighbour cells have the same MBSFN subframe allocation as serving cell)		Cell 1
	'01'B (No MBSFN subframes are present in all neighbour cells)		Cell 2
cellForWhichToReportCGI	Physical Cell ID of Cell 2		Cell 1
}			

Table 8.3.4.4.3-9: *SystemInformationBlockType2*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement

Derivation Path: TS 36.508 [7] clause 7.2.1.3, Table 7.2.1.3-1 SystemInformationBlockType2 exceptions			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType2 ::= SEQUENCE {			
mbsfn-SubframeConfig	Not present		Cell 1
}			

Table 8.3.4.4.3-10: *SystemInformationBlockType3*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement

Derivation Path: TS 36.508 [7] clause 7.2.1.3, Table 7.2.1.3-2 SystemInformationBlockType3 exceptions			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType3 ::= SEQUENCE {			
neighCellConfig	'00'B (Not all neighbour cells have the same MBSFN subframe allocation as serving cell)		Cell 1
	'01'B (No MBSFN subframes are present in all neighbour cells)		Cell 2
}			

Table 8.3.4.4.3-11: *SystemInformationBlockType5*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement

Derivation Path: TS 36.508 [7] clause 7.2.1.3, Table 7.2.1.3-3 SystemInformationBlockType5 exceptions			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType5 ::= SEQUENCE {			
neighCellConfig[*n*]	'00'B (Not all neighbour cells have the same MBSFN subframe allocation as serving cell)		Cell 1
	'01'B (No MBSFN subframes are present in all neighbour cells)		Cell 2
}			

Table 8.3.4.4.3-12: *MeasConfig-DEFAULT*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1 MeasConfig-DEFAULT:			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
measGapConfig	MeasGapConfig-GP1		Gap Pattern Id = 0
}			

Table 8.3.4.4.3-13: *MeasConfig-DEFAULT*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step7)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1 MeasConfig-DEFAULT:			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId))OF SEQUENCE {	1 entry		
reportConfigId	idReportConfig-P		
reportConfig	ReportConfigEUTRA-PERIODICAL		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) of SEQUENCE {	1 entry		
measId	2		
measObjectId	IdMeasObject-f2		
reportConfigId	IdReportConfig-P		
}			
}			

Table 8.3.4.4.3-14: *MeasResults*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step10)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	2	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

8.3.4.5 Test requirement

Tables 8.3.4.4.1-1 and 8.3.4.5-1 define the primary level settings including test tolerances for E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test.

Table 8.3.4.5-1: Cell Specific Test requirement 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 Number		1			2		
$BW_{channel}$	MHz	10			10		
OCNG Patterns defined in D.1.10 (OP.10 FDD) and in D.1.2 (OP.2 FDD)		OP.10 FDD	OP.10 FDD	OP.10 FDD	OP.2 FDD	OP.2 FDD	OP.2 FDD
PBCH_RA	dB	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						

$\hat{E}_s/I_{ot}$	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.							

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

The overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Test requirement = RRC Procedure delay + $T_{identify\_CGI, inter}$ + TTI insertion uncertainty

RRC procedure delay=15ms

$$T_{identify\_CGI, inter} = T_{basic\_identify\_CGI, inter} \quad ms$$

$T_{basic\_identify\_CGI,inter}$ = 150 ms

TTI insertion uncertainty = 2 ms

The overall delays measured is 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.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

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 TS 36.133 [4] Section 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.

8.3.5 E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

8.3.5.1 Test purpose

To verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps in DRX.

8.3.5.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 9 and forward with support of inter-frequency SI acquisition for HO. Applicability requires support for FGI bit 5.

8.3.5.3 Minimum conformance requirements

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 section 5.5.3.1 of TS 36.331 [5]. 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', the UE shall be able to identify a new CGI of E-UTRA cell within:

$$T_{\text{identify\_CGI, inter}} = T_{\text{basic\_identify\_CGI, inter}} \quad ms$$

Where

$T_{\text{basic\_identify\_CGI, inter}}$ = 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.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in TS 36.133 [4] Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP and SCH Ês/Iot according to Annex I.2. 3 for a corresponding Band

The requirement for identifying a new CGI of an E-UTRA cell within $T_{\text{basic\_identify\_CGI, inter}}$ is applicable when no DRX is used as well as when all the DRX cycles specified in 3GPP TS 36.331 [5] are used.

.

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.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.3.5 and A.8.3.5.

8.3.5.4 Test description

8.3.5.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.14.
2. The general test parameter settings are set up according to Table 8.3.5.4.1-1.
3. Propagation conditions are set according to Annex B clauses B.0.
4. Message contents are defined in clause 8.3.5.4.3.
5. There are two E-UTRA FDD carriers and two cells specified in the test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.3.5.4.1-1: General test parameters for E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps when DRX is used

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.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 3GPP TS 36.133 [4] section 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 8.3.5.5-2
si-RequestForHO		TRUE	As specified in section 5.5.3.1 in TS 36.331 [5].
Time offset between cells	ms	3	Asynchronous cells
T1	s	5	
T2	s	≤30	UE should report cell within 25.6s (20 DRX cycles)
T3	s	5	

8.3.5.4.2 Test procedure

The test comprises of one active cell and one neighbour 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. Gap pattern configuration is configured before T2 begins to enable inter-frequency monitoring. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report.

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.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
2. Set the parameters according to T1 in Table 8.3.5.5-1. Propagation conditions are set according to Annex B clauses B.1.1. T1 starts.
3. SS shall transmit an RRCConnectionReconfiguration with event A3 configured message.
4. The UE shall transmit RRCConnectionReconfigurationComplete message.
5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.3.5.5-1.
6. UE shall transmit a MeasurementReport message triggered by Event A3.
7. SS shall transmit an RRCConnectionReconfiguration message during period T2, The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE.
8. The SS shall start T3 timer when the last TTI containing the RRC message implying SI reading is sent to UE.
9. The UE shall transmit RRCConnectionReconfigurationComplete message.
10. UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3. If the overall delays measured from the beginning of time period T3 is less than 170 ms then the number of successful tests is increased by one. If the UE fails to report the cell global identifier within the overall delays measured requirement then the number of failure tests is increased by one.

11. After the SS receive the MeasurementReport message in step 10) or when T3 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

12. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

13. After the RRC connection release, the SS:
    - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
    or
    - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

14. Repeat step 2-13 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.3.5.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.3.5.4.3-1: Common Exception messages for E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-7 Table H.3.1-9

Table 8.3.5.4.3-2: *RRCConnectionReconfiguration*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.1, Table 4.6.1-8 RRCConnectionReconfiguration			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier-DL		
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
measConfig	MeasConfig -DEFAULT		
radioResourceConfigDedicated	RadioResourceConfigDedicated-HO		
}			
}			
}			
}			

Table 8.3.5.4.3-3: *MAC-MainConfig-RBC*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.8.2.1.5, Table 4.8.2.1.5-1 MAC-MainConfig-RBC			
Information Element	**Value/remark**	**Comment**	**Condition**
MAC-MainConfig-RBC ::= SEQUENCE {			
ul-SCH-Config SEQUENCE {			
maxHARQ-Tx	n5		
periodicBSR-Timer	sf20		
retxBSR-Timer	sf1280		
ttiBundling	FALSE		
}			
drx-Config CHOICE {			
Setup SEQUENCE {			
onDurationTimer	psf1		
drx-InactivityTimer	psf1		
drx-RetransmissionTimer	psf1		
longDRX-CycleStartOffset CHOICE {		sf1280 typical value in real network for real-time services.	
sf1280	9		
}			
shortDRX	Not present		
}			
}			
timeAlignmentTimerDedicated	Infinity		
}			

Table 8.3.5.4.3-4: *PhysicalConfigDedicated-DEFAULT*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.8.2.1.6, Table 4.8.2.1.6-1 PhysicalConfigDedicated-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
PhysicalConfigDedicated-DEFAULT ::= SEQUENCE {			
…			
schedulingRequestConfig	SchedulingRequest-Config-DEFAULT		
}			

Table 8.3.5.4.3-5: *SchedulingRequest-Config-DEFAULT*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.3, Table 4.6.3-20 SchedulingRequest-Config-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequest-Config-DEFAULT ::= CHOICE {			
setup SEQUENCE {			
sr-PUCCH-ResourceIndex	41	10 MHz channel bandwidth parameter	
sr-ConfigIndex	0		
dsr-TransMax	n4		
}			
}			

Table 8.3.5.4.3-6: *ReportConfigEUTRA-A3*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12(-6 dB)	-6 is actual value in dB (-12 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
Hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			
}			

Table 8.3.5.4.3-7: *MeasResults*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.3.5.4.3-8: *MeasResultListEUTRA*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step6)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
measResult SEQUENCE {			
rsrpResult		Set according to specific test INTEGER(0..97)	
rsrqResult		Set according to specific test INTEGER(0..34)	
}			
}			

Table 8.3.5.4.3-9: *ReportConfigEUTRA-PERIODICAL*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step7)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-7 ReportConfigEUTRA-PERIODICAL			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-PERIODICAL ::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose	reportCGI		
}			
}			
reportAmount	1		
si-RequestForHO-r9	setup		
}			

Table 8.3.5.4.3-10: MeasGapConfig- Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step7)

Derivation Path: 36.331, clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasGapConfig ::= CHOICE {			
release	NULL		
}			

Table 8.3.5.4.3-11: *MeasResultListEUTRA*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step10)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
cgi-Info SEQUENCE{			
cellGlobalId SEQUENCE{			
plmn-Identity	plmn-Identity		
cellIdentity	cellIdentity		
}			
trackingAreaCode			
plmn-IdentityList			
}			
}			

Table 8.3.5.4.3-12: *MeasObjectEUTRA-GENERIC*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-2 MeasObjectEUTRA-GENERIC			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-GENERIC(Freq) ::= SEQUENCE {			
cellForWhichToReportCGI	Physical Cell ID of Cell 2		Cell 1
}			

Table 8.3.5.4.3-13: *MeasConfig-DEFAULT*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1 MeasConfig-DEFAULT:			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
measGapConfig	MeasGapConfig-GP1		Gap Pattern Id = 0
}			

Table 8.3.5.4.3-14: *MeasConfig-DEFAULT*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step7)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1 MeasConfig-DEFAULT:			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId))OF SEQUENCE {	1 entry		
reportConfigId	idReportConfig-P		
reportConfig	ReportConfigEUTRA-PERIODICAL		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) of SEQUENCE {	1 entry		
measId	2		
measObjectId	IdMeasObject-f2		
reportConfigId	IdReportConfig-P		
}			
}			

Table 8.3.5.4.3-15: *MeasResults*: Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step10)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	2	Identifies the measurement id for the reporting being perfomed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

8.3.5.5 Test requirement

Tables 8.3.5.4.1-1, 8.3.5.5-2 and 8.3.5.5-3 define the primary level settings including test tolerances for E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps when DRX is used test.

Table 8.3.5.5-1: Cell Specific Test requirement 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 Number		1			2		
$BW_{channel}$	MHz	10			10		
OCNG Patterns defined in D.1.1 (OP.1 FDD) and in D.1.2 (OP.2 FDD)		OP.1 FDD	OP.1 FDD	OP.1 FDD	OP.2 FDD	OP.2 FDD	OP.2 FDD
PBCH_RA	dB	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						
$\hat{E}_s/I_{ot}$	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 8.3.5.5-2: 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 section 6.3.2 in 3GPP TS 36.331[5]
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table 8.3.5.5-3: *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 section 6.3.2 in 3GPP TS 36.331[5]
sr-ConfigIndex	0	For further information see section 6.3.2 in 3GPP TS 36.331[5] and section10.1 in 3GPP TS 36.213 [8]

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

The overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Test requirement = RRC Procedure delay + $T_{identify\_CGI,\ inter}$ + TTI insertion uncertainty

RRC procedure delay=15ms

$$T_{identify\_CGI,\ inter} = T_{basic\_identify\_CGI,\ inter} \quad ms$$

$T_{basic\_identify\_CGI,inter}$ = 150 ms

TTI insertion uncertainty = 2 ms

The overall delay measured is 167 ms, allow 170 ms.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.3.6 E-UTRAN FDD-FDD Inter-frequency event triggered reporting without measurement gaps under AWGN propagation conditions in asynchronous cells

Editor's note: This test case is incomplete. The following aspects are either missing or not yet determined:

- Message contents are FFS
- The Test system uncertainties applicable to this test are undefined
- The Test tolerances applicable to this test are undefined

8.3.6.1 Test purpose

To verify theUE's ability to make a correct reporting of an event without measurement gaps within the E-UTRA FDD inter-frequency cell search requirements.

8.3.6.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 10 and forward.

8.3.6.3 Minimum conformance requirements

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:

$$T_{Identify\_Inter} = T_{Basic\_Identify\_Inter} \cdot \frac{480}{T_{Inter1}} \cdot N_{freq} \quad ms$$

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_{freq} is defined in TS 36.133 [4] section 8.1.2.1.1 and T_{inter1} is defined in TS 36.133 [4] section 8.1.2.1

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP 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 and RSRQ related side conditions given in TS 36.133 [4] sections 9.1.6.1 and 9.1.6.2 are fulfilled,
- $SCH\_RP|_{dBm}$ and SCH Ês/Iot according to Annex I.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 and RSRQ measurements to higher layers with measurement accuracy as specified in TS36.133 [4] sub-clauses 9.1.3.1, 9.1.3.2, 9.1.6.1, and 9.1.6.2, respectively, with measurement period given by table 8.3.6.3-1.

Table 8.3.6.3-1: Measurement period and measurement bandwidth

Configuration	Physical Layer Measurement period: $T_{Measurement\_Period\_Inter\_FDD}$ [ms]	Measurement bandwidth [RB]
0	480 x N_{freq}	6
1 (Note)	240 x N_{freq}	50
Note: This configuration is optional		

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 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 8.3.6.3-1.

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] sections 9.1.3.1, 9.1.3.2, 9.1.6.1, and 9.1.6.2, 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 $T_{identify\text{-}inter}$ defined in TS36.133 [4] clause 8.1.2.3.1.1. 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 $T_{identify\_inter}$ defined in TS36.133 [4] 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 TS 36.133 [4] clause 8.1.2.3.1.1 provided the timing to that cell has not changed more than ± 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.
The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.3 and A.8.3.6.

8.3.6.4 Test description

8.3.6.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.15.

2. The general test parameter settings are set up according to Table 8.3.6.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.3.6.4.3.

5. There are two E-UTRA FDD carriers and two cells on different carrier frequencies and no gaps are configured in this test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.3.6.4.1-1: 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.0 FDD	As specified in section A.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.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	

8.3.6.4.2 Test procedure

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.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
2. Set the parameters according to T1 in Table 8.3.6.5-1. Propagation conditions are set according to Annex B clauses B.1.1. T1 starts.
3. SS shall transmit an RRCConnectionReconfiguration message.
4. The UE shall transmit RRCConnectionReconfigurationComplete message.
5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.3.6.5-1.
6. UE shall transmit a MeasurementReport message triggered by Event A3. If the measurement reporting delay from the beginning of time period T2 is less than 3842ms and at least 85% of all ACK/NACKS transmitted by the UE are detected by the system simulator until the measurement report is received during T2 the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement or less than 85% of all ACK/NACKS transmitted by the UE are detected by the system simulator then the number of failure tests is increased by one.
7. After the SS receives the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.
8. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.
9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with UE-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),

or
- switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.3.6.4.3 Message contents

FFS

8.3.6.5 Test requirement

Tables 8.3.6.4.1-1 and 8.3.6.5-1 define the primary level settings including test tolerances for E-UTRAN FDD-FDD Inter-frequency event triggered reporting without measurement gaps under AWGN propagation conditions in asynchronous cells test.

Table 8.3.6.5-1: Cell specific test parameters for E-UTRAN FDD-FDD inter-frequency event triggered reporting without measurement gaps

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
E-UTRA RF Channel Number		1		2	
$BW_{channel}$	MHz	10		10	
OCNG Patterns defined in D.1.1 (OP.1 FDD) and in D.1.2 (OP.2 FDD)		OP.1 FDD		OP.2 FDD	
PBCH_RA	dB	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				
N_{oc} Note 2	dBm/15 kHz	-98			
RSRP Note 3	dBm/15 kHz	-94+TT	-94+TT	-Infinity	-91+TT
$\hat{E}_s/I_{ot}$	dB	4+TT	4+TT	-Infinity	7+TT
SCH_RP Note 3	dBm/15 kHz	-94+TT	-94+TT	-Infinity	-91+TT
$\hat{E}_s/N_{oc}$	dB	4+TT	4+TT	-Infinity	7+TT
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.					

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 3842 ms from the beginning of time period T2.

The overall delays measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event A3 triggered measurement report to Cell 2.

The overall delays measured test requirement is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = 3840 ms

TTI insertion uncertainty = TTI_{DCCH} = 1 ms; $2xTTI_{DCCH}$ = 2 ms

The overall delays measured shall be less than a total of 3842 ms in this test case (note: this gives a total of 3840 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

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% with a confidence level of 95%.

8.4 E-UTRAN TDD-TDD inter frequency measurements

8.4.1 E-UTRAN TDD-TDD Inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined
- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.4.1.1 Test purpose

To verify the UE's ability to make a correct reporting of an event under fading propagation conditions in synchronous cells within the E-UTRA TDD inter-frequency cell search requirements. This test will partly verify the TDD-TDD inter-frequency cell search requirements in section 8.1.2.3.

8.4.1.2 Test applicability

This test applies to all types of E-UTRA TDD UE release 8 and forward. Applicability requires support for FGI bit 25.

8.4.1.3 Minimum conformance requirements

When measurement gaps are scheduled the UE shall be able to identify a new TDD inter-frequency within $T_{Identify\_Inter}$ according to the following expression:

$$T_{Identify\_Inter} = T_{Basic\_Identify\_Inter} \cdot \frac{480}{T_{Inter1}} \cdot N_{freq} \quad ms$$

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 TDD inter-frequency cell is defined.

T_{inter1} is defined in TS 36.133 [4] section 8.1.2.1

N_{freq} is defined in TS 36.133 [4] section 8.1.2.1.1.

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP and RSRP Ês/Iot according to Annex I.2.3 for a corresponding Band,
- other RSRP related side conditions given in TS 36.133 [4] Sections 9.1.3.1, 9.1.3.2, 9.1.6.1, and 9.1.6.2, respectively are fulfilled.

- SCH_RP|$_{dBm}$ and SCH Ês/Iot according to Annex I.2.3 for a corresponding Band.

When measurement gaps are scheduled for TDD inter frequency measurements the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with measurement accuracy as specified in TS 36.133 sub-clauses 9.1.3.1, 9.1.3.2, 9.1.6.1, and 9.1.6.2, respectively, with measurement period ($T_{Measurement\_Period\_TDD\_Inter}$) given by table 8.4.4.1.3-1.

Table 8.4.1.3-1: $T_{Measurement\_Period\_TDD\_Inter}$ 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]
		DL	UL	Normal CP	Extended CP	
0	6	2	2	$19760 \cdot T_s$	$20480 \cdot T_s$	480 x N_{freq}
1 (Note 1)	50	2	2	$19760 \cdot T_s$	$20480 \cdot T_s$	240 x N_{freq}
Note 1: This configuration is optional. Note 2: T_s is defined in 3GPP TS 36.211 [9].						

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 inter-frequency cells per TDD inter-frequency and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period $T_{Measurement\_Period\_TDD\_Inter}$.

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] clauses 9.1.3.1, 9.1.3.2, 9.1.6.1, and 9.1.6.2, 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 TS 36.133 [4] clause 8.1.2.3.2.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify\_intra}$ defined in TS 36.133 [4] section 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 an additional delay can be expected

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.3.2 and A.8.4.1.

8.4.1.4 Test description

8.4.1.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.15.

2. The general test parameter settings are set up according to Table 8.4.1.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.4.1.4.3.

5. There are two E-UTRA TDD carriers and two cells specified in the test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.4.1.4.1-1: 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 section A.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.2.2
Gap Pattern Id		1	As specified in 3GPP TS 36.133 section 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 3GPP TS 36.211 section 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	dB	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Time offset between cells	μs	3	Synchronous cells 3μs or 92*Ts
T1	s	5	
T2	s	10	

8.4.1.4.2 Test procedure

The test consists of two successive time periods, with time durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of cell 2. Gap pattern configuration is configured before T2 begins to enable inter-frequency monitoring.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table 8.4.1.5-1. Propagation conditions are set according to Annex B clauses B.1.1 and B.2.2. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.4.1.5-1.

6. UE shall transmit a MeasurementReport message triggered by Event A3. If the measurement reporting delay from the beginning of time period T2 is less than 7682 ms the number of successful tests is increased by one. If the UE fails to report the event within the measurement reporting delay requirement then the number of failure tests is increased by one.

7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit an RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and

ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
or
- switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.4.1.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.4.1.4.3-1: Common Exception messages for Additional E-UTRAN TDD-TDD inter frequency event triggered reporting under fading propagation conditions in synchronous cells test requirement

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H3.1-1 Table H3.1-3 Table H.3.1-7

Table 8.4.1.4.3-2: *ReportConfigEUTRA-A3*: Additional E-UTRAN TDD-TDD inter frequency event triggered reporting under fading propagation conditions in synchronous cells test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12 (-6 dB)	-6 is actual value in dB (-12 * 0.5 dB)	
}			
}			
Hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			

Table 8.4.1.4.3-3: *MeasResults*: Additional E-UTRAN TDD-TDD inter frequency event triggered reporting under fading propagation conditions in synchronous cells test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId			
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.4.1.4.3-4: *MeasResultListEUTRA*: Additional E-UTRAN TDD-TDD inter frequency event triggered reporting under fading propagation conditions in synchronous cells test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultEUTRA {			
MeasResultEUTRA ::= SEQUENCE {			
physCellId	PhysicalCellIdentity		
measResult SEQUENCE {			
rsrpResult		Set according to specific test INTEGER(0..97)	
rsrqResult		Set according to specific test INTEGER(0..34)	
}			
}			

8.4.1.5 Test requirement

Tables 8.4.1.4.1-1 and 8.4.1.5-1 define the primary level settings including test tolerances for event triggered reporting under fading propagation conditions in asynchronous inter frequency cells test.

Table 8.4.1.5-1: Cell specific test parameters for E-UTRAN TDD-TDD inter frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
E-UTRA RF Channel Number		1		2	
$BW_{channel}$	MHz	10		10	
OCNG Pattern defined in D.2.1 (OP.1 TDD) and in D.2.2 (OP.2)		OP.1 TDD		OP.2 TDD	
PBCH_RA	dB	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				

$\hat{E}_s/I_{ot}$	dB	4	4	-Infinity	7.30
N_{oc} Note 3	dBm/15 kHz	-98			
RSRP Note 4	dBm/15 kHz	-94	-94	-Infinity	-90.70
SCH_RP	dBm/15 kHz	-94	-94	-infinity	-90.70
$\hat{E}_s/N_{oc}$	dB	4	4	-Infinity	7.30
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 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.					

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 7682 ms from the beginning of time period T2.

TTI insertion uncertainty = 2 ms

The overall delays measured shall be less than a total of 7682 ms in this test case (note: a total of 7680 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

The rate of correct events observed during repeated tests shall be at least 90% with a confidence level of 95%.

1) 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.

8.4.2 E-UTRAN TDD-TDD Inter-frequency event triggered reporting when DRX is used under fading propagation conditions in synchronous cells

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined
- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.4.2.1 Test purpose

To verify the UE's ability to make a correct reporting of an event under fading propagation conditions in synchronous cells with DRX within the E-UTRA TDD-TDD inter frequency cell search in DRX requirements.

8.4.2.2 Test applicability

This test applies to all types of E-UTRA TDD UE release 8 and forward. Applicability requires support for FGI bits 5, and 25.

8.4.2.3 Minimum conformance requirements

When DRX is in use the UE shall be able to identify a new detectable E-UTRAN TDD inter frequency cell within $T_{identify\_inter}$ as shown in table 8.4.2.3-1.

Table 8.4.2.3-1: Requirement to identify a newly detectable TDD inter frequency cell

DRX cycle length (s)	$T_{identify\_inter}$ (s) (DRX cycles)	
	Gap period = 40 ms	Gap period = 80 ms

≤0.16	Non DRX Requirements in section 8.1.2.3.2.1 are applicable	Non DRX Requirements in section 8.1.2.3.2.1 are applicable
0.256	5.12*Nfreq (20*Nfreq)	7.68*Nfreq (30*Nfreq)
0.32	6.4*Nfreq (20*Nfreq)	7.68*Nfreq (24*Nfreq)
0.32<DRX-cycle≤2.56	Note (20*Nfreq)	Note (20*Nfreq)
Note: Time depends upon the DRX cycle in use		

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP and RSRP Ês/Iot according to Annex I.2.3 for a corresponding Band,
- other RSRP related side conditions given in TS 36.133 [4] Sections 9.1.3.1 and 9.1.3.2 and RSRQ related side conditions given in Sections 9.1.6.1 and 9.1.6.2 are fulfilled,
- $SCH\_RP|_{dBm}$ and SCH Ês/Iot according to Annex I.2.3 for a corresponding Band.

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 inter-frequency cells per TDD inter-frequency and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period defined in Table 8.4.2.3-2.

Table 8.4.2.3-2: Requirement to measure TDD inter frequency cells

DRX cycle length (s)	$T_{measure\_inter}$ (s) (DRX cycles)
≤0.84	Non DRX Requirements in section 8.1.2.3.1.1 are applicable
0.08<DRX-cycle≤2.56	Note ($5*N_{freq}$)
Note: Time depends upon the DRX cycle in use	

The RSRP measurement accuracy for all measured cells shall be as specified in TS 36.133 [4] sub-clauses 9.1.3.1 and 9.1.3.2, and 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.

Reported RSRP and RSRQ measurements contained in periodically triggered measurement reports shall meet the requirements in TS 36.133 [4] sections 9.1.3.1, 9.1.3.2, 9.1.6.1, and 9.1.6.2, respectively.

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in TS 36.133 [4] sections 9.1.3.1, 9.1.3.2, 9.1.6.1, and 9.1.6.2, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in TS 36.133 [4] section 8.1.2.3.2.2.1.3 Event Triggered Reporting.

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] sections 9.1.3.1, 9.1.3.2, 9.1.6.1, and 9.1.6.2, 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 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 TS 36.133 [4] Section 8.1.2.3.2.2 When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify\_intra}$ defined in TS 36.133 [4] section 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 an additional delay can be expected

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.3.2.2 and A.8.4.2.

8.4.2.4 Test description

8.4.2.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.15.
2. The general test parameter settings are set up according to Table 8.4.2.4.1-1.
3. Propagation conditions are set according to Annex B clauses B.0.
4. Message contents are defined in clause 8.4.2.4.3.
5. There are two cells on different carrier frequencies and gap pattern configuration # 0 as defined in TS 36.133[4] Table 8.1.2.1-1 is provided. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.4.2.4.1-1: General test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions

Parameter	Unit	Test 1	Test 2	Comment
		Value		

PDSCH parameters		DL Reference Measurement Channel R.0 TDD		As specified in section A.1.2. Note that UE may only be allocated at *On Duration*
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD		As specified in section A.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 2 is on RF channel number 2
Gap Pattern Id		0		As specified in 3GPP TS 36.133 section 8.1.2.1.
Uplink-downlink configuration		1		As specified in 3GPP TS 36.211 section 4.2 Table 4.2-2
Special subframe configuration		6		As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
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 8.4.2.4.1-2
Time offset between cells	μs	3		Synchronous cells 3μs or 92*Ts
T1	s	5		
T2	s	5	30	

8.4.2.4.2 Test procedure

The test consists of one active cell and one neighbour cell. 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 durations 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, the 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.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table 8.4.2.5-1. Propagation conditions are set according to Annex B clauses B.1.1 and B.2.2. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.4.2.5-1.

6. UE shall transmit a MeasurementReport message triggered by Event A3. If the overall delays measured from the beginning of time period T2 is less than 3882 ms for Test 1 and 26882 ms for Test 2 then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

7. After the SS receives the MeasurementReport message in step 6 or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

11. Repeat step 1-10 for each sub-test in Table 8.4.2.4.1-1 as appropriate.

8.4.2.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.4.2.4.3-1: Common Exception messages for Additional E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions test requirement

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-7 Table H.3.1-9 Table H.3.7-1 Table H.3.7-2 Table H.3.7-3

Table 8.4.2.4.3-2: *RRCConnectionReconfiguration*: Additional E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions test requirement

Derivation Path: TS 36.508 [7] clause 4.6.1, Table 4.6.1-8 RRCConnectionReconfiguration			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier-DL		
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
measConfig			
	MeasConfig-DEFAULT		
radioResourceConfigDedicated	RadioResourceConfigDedicated- HO		
}			
}			
}			
}			

Table 8.4.2.4.3-3: *ReportConfigEUTRA-A3*: Additional E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12 (-6 dB)	-6 is actual value in dB (-12 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			

Table 8.4.2.4.3-4: *SchedulingRequest-Config-DEFAULT*: Additional E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions test requirement

Derivation Path: TS 36.508 [7] clause 4.6.3, Table 4.6.3-20: SchedulingRequest-Config-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequest-Config-DEFAULT ::= CHOICE {			
setup SEQUENCE {			
sr-PUCCH-ResourceIndex	41	Channel-bandwidth-dependent parameter	
sr-ConfigIndex	2		
dsr-TransMax	n4		
}			
}			

Table 8.4.2.4.3-5: *MeasResults:* Additional E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	INTEGER(0..97)	Set according to specific test	
rsrqResult	INTEGER(0..34)	Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.4.2.4.3-6: *MeasResultListEUTRA*: Additional E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultsListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysCellId	INTEGER (0..503)	
measResult SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
}			

Table 8.4.2.4.3-7: *PRACH-Config-DEFAULT*: Additional E-UTRAN TDD-TDD inter-frequency event triggered reporting when DRX is used in fading propagation conditions test requirement

Derivation Path: TS 36.508 [7] clause 7.3.2 Table 7.3.2-1			
Information Element	**Value/remark**	**Comment**	**Condition**
PRACH-Config-DEFAULT ::= SEQUENCE {			
prach-ConfigIndex	4		
}			

8.4.2.5 Test requirement

Tables 8.4.2.5-1, 8.4.2.5-2 and 8.4.2.5-3 define the primary level settings including test tolerances for E-UTRAN TDD-TDD intra-frequency event triggered reporting under fading propagation conditions in synchronous cells when DRX is used test.

Table 8.4.2.5-1: Cell specific test parameters for E-UTRAN TDD-TDD inter-frequency event triggered reporting under fading propagation conditions in synchronous cells

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
E-UTRA RF Channel Number		1		2	
$BW_{channel}$	MHz	10		10	
OCNG Patterns defined in D.2.1 (OP.1 TDD) and in D.2.2 (OP.2 TDD)		OP.1 TDD		OP.2 TDD	
PBCH_RA	dB	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				

N_{oc} Note 2	dBm/15 kHz	-98			
RSRP Note 3	dBm/15 kHz	-94	-94	-Infinity	-90.70
$\hat{E}_s/I_{ot}$	dB	4	4	-Infinity	7.30
SCH_RP Note 3	dBm/15 kHz	-94	-94	-Infinity	-90.70
$\hat{E}_s/N_{oc}$	dB	4	4	-Infinity	7.30
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: 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 8.4.2.5-2: 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
	Value	Value	
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Table 8.4.2.5-3: *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
	Value	Value	
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331 [5].
sr-ConfigIndex	2	2	For further information see section 6.3.2 in 3GPP TS 36.331 and 10.1 in 3GPP TS 36.213 [8].

In Test1 when DRX cycle length = 40 ms is used, the overall delay measured is defined as the time from the beginning of time period T2, to the moment when the UE send one Event A3 triggered measurement report on PUSCH.

In Test 2 when DRX cycle length = 1280 ms is used, the overall delay measured is defined as the time from the beginning of time period T2, to the moment the UE starts to send preambles on the PRACH for Scheduling Request (SR) to obtain allocation to send the measurement report to Cell 2 on PUSCH.TTI insertion uncertainty = 2 ms

For both tests:

The overall delay measured may be up to 2xTTI_{DCCH} higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

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.

The overall delay measured when DRX cycle length is 40 ms test requirement is expressed as:

Overall delay measured = measurement reporting delay + TTI insertion uncertainty + DRX cycle length

Measurement reporting delay = $T_{Identify\_Inter}$

$$T_{Identify\_Inter} = T_{Basic\_Identify\_Inter} \cdot \frac{480}{T_{Inter1}} \cdot N_{freq} \quad ms$$

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.

T_{Inter1} = 60 ms. It is defined in table 8.1.2.1-1 of TS36.133 [4] clause 8.1.2.1.

N_{freq} = 1. It is defined in TS 36.133 [4] clause 8.1.2.1.1.

TTI insertion uncertainty = 2 ms

DRX cycle length = 40 ms

The overall delay measured when DRX cycle length is 40 ms shall be less than a total of 3882 ms.

The overall delay measured when DRX cycle length is 1280 ms test requirement is expressed as:

Overall delay measured = measurement reporting delay + TTI insertion uncertainty + DRX cycle length

Measurement reporting delay = $T_{identify\_inter}$

$T_{identify\_inter}$ = 25600 ms. When DRX cycle length is 1280 ms then the $T_{identify\_inter}$ is 20 x 1280 ms, as defined in Table 8.4.2.3-1.

TTI insertion uncertainty = 2 ms

DRX cycle length = 1280 ms

The overall delay measured when DRX cycle length is 1280 ms shall be less than a total of 26882 ms.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

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

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined
- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.4.3.1 Test purpose

To verify the UE's ability to make a correct reporting of an event in DRX when L3 filtering is used in AWGN propagation conditions in synchronous cells within the E-UTRA TDD-TDD inter frequency cell search in DRX requirements and the UE behaviour with the filterCoefficent.

8.4.3.2 Test applicability

This test applies to all types of E-UTRA TDD UE release 8 and forward. Applicability requires support for FGI bits 5, and 25.

8.4.3.3 Minimum conformance requirements

When DRX is in use the UE shall be able to identify a new detectable E-UTRAN TDD inter frequency cell within $T_{identify\_inter}$ as shown in table 8.4.3.3-1

Table 8.4.3.3-1: Requirement to identify a newly detectable TDD inter frequency cell

DRX cycle length (s)	$T_{identify\_inter}$ (s) (DRX cycles)	
	Gap period = 40 ms	Gap period = 80 ms
≤0.16	Non DRX Requirements in section 8.1.2.3.2.1 are applicable	Non DRX Requirements in section 8.1.2.3.2.1 are applicable
0.256	5.12*Nfreq (20*Nfreq)	7.68*Nfreq (30*Nfreq)
0.32	6.4*Nfreq (20*Nfreq)	7.68*Nfreq (24*Nfreq)
0.32<DRX-cycle≤2.56	Note (20*Nfreq)	Note (20*Nfreq)
Note: Time depends upon the DRX cycle in use		

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP and RSRP Ês/Iot according to Annex I.2.3 for a corresponding Band,
- other RSRP related side conditions given in TS 36.133 [4] Sections 9.1.3.1 and 9.1.3.2 and RSRQ related side conditions given in Sections 9.1.6.1 and 9.1.6.2 are fulfilled,
- SCH_RP$|_{dBm}$ and SCH Ês/Iot according to Annex I.2.3 for a corresponding Band.

The UE shall be capable of performing RSRP and RSRQ 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 and RSRQ measurements to higher layers with the measurement period defined in Table 8.4.3.3-2.

Table 8.4.3.3-2: Requirement to measure TDD inter frequency cells

DRX cycle length (s)	$T_{measure\_inter}$ (s) (DRX cycles)
≤0.08	Non DRX Requirements in section 8.1.2.3.2.1 are applicable
0.08 <DRX-cycle ≤ 2.56	Note (5*N_{freq})
Note: Time depends upon the DRX cycle in use	

The RSRP measurement accuracy for all measured cells shall be as specified in the TS 36.133 [4] sub-clauses 9.1.3.1 and 9.1.3.2, and 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.

Reported RSRP measurements contained in periodically triggered measurement reports shall meet the requirements in TS 36.133 [4] sections 9.1.3.1, 9.1.3.2, 9.1.6.1, and 9.1.6.2, respectively.

Reported RSRP and RSRQ measurements contained in event triggered periodic measurement reports shall meet the requirements in TS 36.133 [4] sections 9.1.3.1, 9.1.3.2, 9.1.6.1, and 9.1.6.2, respectively.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in TS 36.133 [4] section 8.1.2.3.2.2.1.3 Event Triggered Reporting.

Reported RSRP and RSRQ measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] sections 9.1.3.1, 9.1.3.2, 9.1.6.1, and 9.1.6.2, 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 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 TS 36.133 [4] Section 8.1.2.3.2.2. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{Identify\_Inter}$ in TS 36.133 [4] section 8.1.2.3.2.2 and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than $T_{measure\_inter}$ in TS 36.133 [4] section 8.1.2.3.2.2 provided the timing to that cell has not changed more than ± 50 Ts while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.3.2.2 and A.8.4.3.

8.4.3.4 Test description

8.4.3.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.14.
2. The general test parameter settings are set up according to Table 8.4.3.4.1-1.
3. Propagation conditions are set according to Annex B clauses B.0.
4. Message contents are defined in clause 8.4.3.4.3.
5. There is one E-UTRA TDD carrier and two cells specified in the test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.4.3.4.1-1: 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 Channel R.0 TDD	As specified in section A.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.2.2
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 3GPP TS 36.133 [4] section 8.1.2.1
Uplink-downlink configuration of cells		1	As specified in table 4.2.2 in TS 36.211
Special subframe configuration of cells		6	As specified in table 4.2.1 in TS 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 8.4.3.5-2
T1	s	30	
T2	s	9	

8.4.3.4.2 Test procedure

The test consists of one active cell and one neighbour cell. 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 durations of T1 and T2 respectively.

In the Test when DRX = 1280 ms is used, a non-zero L3 filtering is configured. The uplink time alignment is not maintained and UE needs to use RACH to obtain UL allocation for measurement reporting.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
2. Set the parameters according to T1 in Table 8.4.3.5-1. Propagation conditions are set according to Annex B clause B.1.1. T1 starts.
3. SS shall transmit an RRCConnectionReconfiguration message.
4. The UE shall transmit RRCConnectionReconfigurationComplete message.
5. During T1 the SS continuously checks the absence of an A3 triggered measurement report from the neighbour cell. If the UE does not send this during T1, then count neither success nor fail. If the UE sends such a report, then count a fail. Upon a fail in step 5, neither success nor fail are counted in step 7.
6. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.4.3.5-1 and 8.4.3.5-2.
7. UE shall transmit a MeasurementReport message triggered by Event A3. If the overall delays measured from the beginning of time period T2 is less than 7682 ms then the number of "successes" is increased by one. Otherwise count a fail.
8. After the SS receive the MeasurementReport message in step 7) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

9. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

10. After the RRC connection release, the SS:

- transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),

or

- switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

11. Repeat step 2-10 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.4.3.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.4.3.4.3-1: Common Exception messages for E-UTRAN TDD-TDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used in test requirement

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-3 Table H.3.7-2 Table H.3.7-3

Table 8.4.3.4.3-2: *RRCConnectionReconfiguration*: Additional E-UTRAN TDD-TDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used in test requirement

Derivation Path: TS 36.508 [7] clause 4.6.1, Table 4.6.1-8 RRCConnectionReconfiguration			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier-DL		
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
measConfig	MeasConfig -DEFAULT		
radioResourceConfigDedicated	RadioResourceConfigDedicated-HO		
}			
}			
}			
}			

Table 8.4.3.4.3-3: *MeasObjectEUTRA-GENERIC(f2)*: Additional E-UTRAN TDD-TDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-2 MeasObjectEUTRA-GENERIC(Freq)			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-GENERIC(Freq) ::= SEQUENCE {			
carrierFreq	Downlink EARFCN for frequency f2 defined in 36.508		
allowedmeasBandwidth	The number of the resource blocks for frequency f2		
presenceAntennaPort1	FALSE		
neighCellConfig	'10'B (The MBSFN subframe allocations of all neighbour cells are identical to or subsets of that in the serving cells)		
offsetFreq	dB-14	-14 dB is actual value in dB (Value dB-14 corresponds to -14 dB)	
cellsToRemoveList	Not present		
cellsToAddModList	Not present		
blackCellsToRemoveList	Not present		
blackCellsToAddModList	Not present		
cellForWhichToReportCGI	Not present		
}			

Table 8.4.3.4.3-4: *ReportConfigEUTRA-A3*: Additional E-UTRAN TDD-TDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used in test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventid CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	0 (0 dB)	The actual value is IE value * 0.5 dB IE Value INTEGER (-30.. 30)	
reportOnLeave	FALSE		
}			
}			
hysteresis	0 (0 dB)	The actual value is IE value * 0.5 dB	
timeToTrigger	0 (0 ms)		
}			
}			

Table 8.4.3.4.3-5: *SchedulingRequest-Config-DEFAULT*: Additional E-UTRAN TDD-TDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used test requirement

Derivation Path: TS 36.508 [7] clause 4.6.3, Table 4.6.3-20 SchedulingRequest-Config-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequest-Config-DEFAULT ::= CHOICE {			
setup SEQUENCE {			
sr-PUCCH-ResourceIndex	41	10 MHz channel bandwidth parameter	
sr-ConfigIndex	2		
dsr-TransMax	n4		
}			
}			

Table 8.4.3.4.3-6: *MeaResults*: Additional E-UTRAN TDD-TDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.4.3.4.3-7: *MeasResultListEUTRA*: Additional E-UTRAN TDD-TDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultEUTRA {			
physCellId	PhysCellId		
measResult SEQUENCE {			
rsrpResult		Set according to specific test INTEGER(0..97)	
rsrqResult		Set according to specific test INTEGER(0..34)	
}			
}			

Table 8.4.3.4.3-8: *FilterCoefficient*: Additional E-UTRAN TDD-TDD inter-frequency event triggered reporting under AWGN propagation conditions with DRX when L3 filtering is used test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
filterCoefficient	fc9		

8.4.3.5 Test requirement

Tables 8.4.3.4.1-1, 8.4.3.5-1, 8.4.3.5-2 and 8.4.3.5-3 define the primary level settings including test tolerances for E-UTRAN FDD-FDD inter-frequency event triggered reporting under AWGN propagation conditions in asynchronous cells with DRX when L3 filtering is used test.

Table 8.4.3.5-1: 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	Cell 1		Cell 2	
		T1	T2	T1	T2
E-UTRA RF Channel Number		1		2	
$BW_{channel}$	MHz	10		10	
OCNG Patterns defined in D.2.1 (OP.1 TDD) and in D.2.2 (OP.2 TDD)		OP.1 TDD		OP.2 TDD	
PBCH_RA	dB	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				
$\hat{E}_s/I_{ot}$	dB	4.00	1.80	4.00	24.00
N_{oc} Note 2	dBm/15 KHz	-96.90	-96.90	-98.00	-98.00
$\hat{E}_s/N_{oc}$	dB	4.00	1.80	4.00	24.00
RSRP Note 3	dBm/15 KHz	-92.90	-95.10	-94.00	-74.00
SCH_RP Note 3	dBm/15 KHz	-92.90	-95.10	-94.00	-74.00
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 8.4.3.5-2: 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 section 6.3.2 in 3GPP TS 36.331 [5].
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table 8.4.3.5-3: 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 section 6.3.2 in 3GPP TS 36.331 [5].
sr-ConfigIndex	2	For further information see section 6.3.2 in 3GPP TS 36.331 [5] and section 10.1 in 3GPP TS 36.213 [8].

The overall delay measured is defined as the time from the beginning of time period T2, to the moment the UE starts to send preambles on the PRACH for Scheduling Request (SR) to obtain allocation to send the measurement report to Cell 2 on PUSCH.

The overall delay measured may be up to 2xTTI_{DCCH} higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

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.

The UE shall not send event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The overall delay measured when DRX cycle length is 1280 ms test requirement is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty + DRX cycle length

Measurement reporting delay = $T_{measure\_inter}$

$T_{measure\_inter}$ = 6400 ms. When DRX cycle length is 1280 ms then the $T_{measure\_inter}$ is 5 x 1280 ms, as defined in Table 8.4.3.3-1.

TTI insertion uncertainty = 2 ms

DRX cycle length = 1280 ms

The overall delay measured when DRX cycle length is 1280 ms shall be less than a total of 7682 ms.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.4.4 E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps

8.4.4.1 Test purpose

To verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps.

8.4.4.2 Test applicability

This test applies to all types of E-UTRA TDD UE release 9 and forward with support of inter-frequency SI acquisition for HO.

8.4.4.3 Minimum conformance requirements

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 section 5.5.3.1 of TS 36.331 [5]. 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 E-UTRA cell within:

$$T_{identify\_CGI, inter} = T_{basic\_identify\_CGI, inter} \quad ms$$

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.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in TS 36.133 [4] Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP $\geq$ -125 dBm for Bands 33, 34, 35, 36, 37, 38, 39, 40, 42, 43 and SCH Ês/Iot $\geq$ - 4 dB.
- SCH_RP $\geq$ -124 dBm for Band 41 and SCH Ês/Iot $\geq$ - 4 dB.

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 3GPP TS 36.331 [5] are used.

Given that continuous DL data allocation and no DRX is used, no measurement gaps are configured, and TDD configuration as in TS 36.133 [4] Table 8.1.2.3.2.1-1 is used, the UE shall have more than 30 ACK/NACKs transmitted during the identification of a new CGI of E-UTRA cell.

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.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.3.7 and A.8.4.4.

8.4.4.4 Test description

8.4.4.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.14.
2. The general test parameter settings are set up according to Table 8.4.4.4.1-1.
3. Propagation conditions are set according to Annex B clauses B.0.
4. Message contents are defined in clause 8.4.4.4.3.
5. There are two E-UTRA TDD carriers and two cells specified in the test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.4.4.4.1-1: 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 section A.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.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[9]. The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211[9]. The same configuration in both cells
Gap Pattern Id		0	As specified in 3GPP TS 36.133 [4] 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 section 5.5.3.1 in TS 36.331 [5].
Time offset between cells	μs	3	Synchronous cells
T1	s	5	
T2	s	≤10	
T3	s	5	

8.4.4.4.2 Test procedure

The test comprises of one active cell and one neighbour cell. 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. Gap pattern configuration is configured before T2 begins to enable inter-frequency monitoring. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table 8.4.4.5-1. Propagation conditions are set according to Annex B clauses B.1.1. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration with event A3 configured message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.4.4.5-1.

6. UE shall transmit a MeasurementReport message triggered by Event A3.

7. SS shall transmit an RRCConnectionReconfiguration message during period T2, The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE.

8. The SS shall start T3 timer when the last TTI containing the RRC message implying SI reading is sent to UE.

9. The UE shall transmit RRCConnectionReconfigurationComplete message.

10. UE shall transmit a MeasurementReport message containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3. 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. If the overall delays measured from the beginning of time period T3 is less than 170 ms, and the UE have more than 42 ACK/NACKs transmitted from the start of T3 until 170 ms, then the number of successful tests is increased by one. If the UE fails to report the cell global identifier within the overall delays measured requirement, or the UE have less than 42 ACK/NACKs transmitted from the start of T3 until 170 ms, then the number of failure tests is increased by one.

11. After the SS receive the MeasurementReport message in step 10) or when T3 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

12. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

13. After the RRC connection release, the SS:
- transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
or
- switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

14. Repeat step 2-13 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.4.4.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.4.4.4.3-1: Common Exception messages for E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-7 Table H.3.1-9

Table 8.4.4.4.3-2: *ReportConfigEUTRA-A3*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12 (-6 dB)	-6 is actual value in dB (-12 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			
}			

Table 8.4.4.4.3-3: *MeasResults*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.4.4.4.3-4: *MeasResultListEUTRA*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step6)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
measResult SEQUENCE {			
rsrpResult		Set according to specific test INTEGER(0..97)	
rsrqResult		Set according to specific test INTEGER(0..34)	
}			
}			

Table 8.4.4.4.3-5: *ReportConfigEUTRA-PERIODICAL*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step7)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-7 ReportConfigEUTRA-PERIODICAL			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-PERIODICAL ::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose	reportCGI		
}			
}			
reportAmount	1		
si-RequestForHO-r9	setup		
}			

Table 8.4.4.4.3-6: MeasGapConfig- Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step7)

Derivation Path: 36.331, clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasGapConfig ::= CHOICE {			
release	NULL		
}			

Table 8.4.4.4.3-7: *MeasResultListEUTRA*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step10)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
cgi-Info SEQUENCE{			
cellGlobalId SEQUENCE{			
plmn-Identity	plmn-Identity		
cellIdentity	cellIdentity		
}			
trackingAreaCode			
plmn-IdentityList			
}			
}			

Table 8.4.4.4.3-8: *MeasObjectEUTRA-GENERIC*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-2 MeasObjectEUTRA-GENERIC			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-GENERIC(Freq) ::= SEQUENCE {			
cellForWhichToReportCGI	Physical Cell ID of Cell 2		Cell 1
}			

Table 8.4.4.4.3-9: *MeasConfig-DEFAULT*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1 MeasConfig-DEFAULT:			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
measGapConfig	MeasGapConfig-GP1		Gap Pattern Id = 0
}			

Table 8.4.4.4.3-10: *MeasConfig-DEFAULT*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step7)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1 MeasConfig-DEFAULT:			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId))OF SEQUENCE {	1 entry		
reportConfigId	idReportConfig-P		
reportConfig	ReportConfigEUTRA-PERIODICAL		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) of SEQUENCE {	1 entry		
measId	2		
measObjectId	IdMeasObject-f2		
reportConfigId	IdReportConfig-P		
}			
}			

Table 8.4.4.4.3-11: *MeasResults*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step10)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	2	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

8.4.4.5 Test requirement

Tables 8.4.4.4.1-1 and 8.4.4.5-1 define the primary level settings including test tolerances for E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test.

Table 8.4.4.5-1: Cell Specific Test requirement 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 Number		1			2		
$BW_{channel}$	MHz	10			10		
OCNG Patterns defined in D.2.1 (OP.1 TDD) and in D.2.2 (OP.2 TDD)		OP.1 TDD	OP.1 TDD	OP.1 TDD	OP.2 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						
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} 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.							

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

The overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Test requirement = RRC Procedure delay + $T_{identify\_CGI,\ inter}$ + TTI insertion uncertainty

RRC procedure delay=15ms

$$T_{identify\_CGI,\ inter} = T_{basic\_identify\_CGI,\ inter} \quad ms$$

$T_{basic\_identify\_CGI,inter}$ = 150 ms

TTI insertion uncertainty = 2 ms

The overall delays measured is 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.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

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 Section TS 36.133 [4] 8.1.2.2.3.1. 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.

8.4.5 E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

8.4.5.1 Test purpose

To verify the requirement for identification of a new CGI of E-UTRA cell with autonomous gaps with DRX.

8.4.5.2 Test applicability

This test applies to all types of E-UTRA TDD UE release 9 and forward with support of inter-frequency SI acquisition for HO. Applicability requires support for FGI bit 5.

8.4.5.3 Minimum conformance requirements

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 section 5.5.3.1 of TS 36.331 [5]. 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 E-UTRA cell within:

$$T_{identify\_CGI,\,inter} = T_{basic\_identify\_CGI,\,inter} \quad ms$$

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.

A cell shall be considered identifiable following conditions are fulfilled:

- RSRP related side conditions given in TS 36.133 [4] Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP $\geq$ -125 dBm for Bands 33, 34, 35, 36, 37, 38, 39, 40, 42, 43 and SCH Ês/Iot $\geq$ - 4 dB.
- SCH_RP $\geq$ -124 dBm for Band 41 and SCH Ês/Iot $\geq$ - 4 dB.

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 3GPP TS 36.331 [5] are used.

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.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.3.7 and A.8.4.5.

8.4.5.4 Test description

8.4.5.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.14.

2. The general test parameter settings are set up according to Table 8.4.5.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.4.5.4.3.

5. There are two E-UTRA TDD carriers and two cells specified in the test. Cell 1 is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.4.5.4.1-1: General test parameters for E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.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 [9]. The same configuration in both cells
Uplink-downlink configuration		1	As specified in table 4.2-2 in TS 36.211 [9]. The same configuration in both cells
Gap Pattern Id		0	As specified in 3GPP TS 36.133 [4] section 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 8.4.5.5-2
si-RequestForHO		TRUE	As specified in section 5.5.3.1 in TS 36.331 [5].
Time offset between cells	μs	3	Synchronous cells
T1	s	5	
T2	s	≤30	UE should report cell within 25.6s (20 DRX cycles)
T3	s	5	

8.4.5.4.2 Test procedure

The test comprises of one active cell and one neighbour 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. Gap pattern configuration is configured before T2 begins to enable inter-frequency monitoring. Starting T2, cell 2 becomes detectable and the UE is expected to detect and send a measurement report.

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.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table 8.4.5.5-1. Propagation conditions are set according to Annex B clauses B.1.1. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration with event A3 configured message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.4.5.5-1.

6. UE shall transmit a MeasurementReport message triggered by Event A3.

7. SS shall transmit an RRCConnectionReconfiguration message during period T2, The RRC message shall create a measurement report configuration with purpose *reportCGI* and *si-RequestForHO* set to TRUE.

8. The SS shall start T3 timer when the last TTI containing the RRC message implying SI reading is sent to UE.

9. The UE shall transmit RRCConnectionReconfigurationComplete message.

10. UE shall transmit a MeasurementReport message containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3. If the overall delays measured from the beginning of time period T3 is less than 170 ms, then the number of successful tests is increased by one. If the UE fails to report the cell global identifier within the overall delays measured requirement, then the number of failure tests is increased by one.

11. After the SS receive the MeasurementReport message in step 10) or when T3 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

12. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

13. After the RRC connection release, the SS:
    - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
    or
    - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

14. Repeat step 2-13 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.4.5.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.4.5.4.3-1: Common Exception messages for E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-7 Table H.3.1-9

Table 8.4.5.4.3-2: *RRCConnectionReconfiguration*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.1, Table 4.6.1-8 RRCConnectionReconfiguration			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier-DL		
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
measConfig	MeasConfig -DEFAULT		
radioResourceConfigDedicated	RadioResourceConfigDedicated-HO		
}			
}			
}			
}			

Table 8.4.5.4.3-3: *MAC-MainConfig-RBC*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.8.2.1.5, Table 4.8.2.1.5-1 MAC-MainConfig-RBC			
Information Element	**Value/remark**	**Comment**	**Condition**
MAC-MainConfig-RBC ::= SEQUENCE {			
ul-SCH-Config SEQUENCE {			
maxHARQ-Tx	n5		
periodicBSR-Timer	sf20		
retxBSR-Timer	sf1280		
ttiBundling	FALSE		
}			
drx-Config CHOICE {			
Setup SEQUENCE {			
onDurationTimer	psf1		
drx-InactivityTimer	psf1		
drx-RetransmissionTimer	psf1		
longDRX-CycleStartOffset CHOICE {		sf1280 typical value in real network for real-time services.	
sf1280	9		
}			
shortDRX	Not present		
}			
}			
timeAlignmentTimerDedicated	Infinity		
}			

Table 8.4.5.4.3-4: *PhysicalConfigDedicated-DEFAULT*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.8.2.1.6, Table 4.8.2.1.6-1 PhysicalConfigDedicated-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
PhysicalConfigDedicated-DEFAULT ::= SEQUENCE {			
…			
schedulingRequestConfig	SchedulingRequest-Config-DEFAULT		
}			

Table 8.4.5.4.3-5: *SchedulingRequest-Config-DEFAULT*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.3, Table 4.6.3-20 SchedulingRequest-Config-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequest-Config-DEFAULT ::= CHOICE {			
setup SEQUENCE {			
sr-PUCCH-ResourceIndex	41	10 MHz channel bandwidth parameter	
sr-ConfigIndex	2		
dsr-TransMax	n4		
}			
}			

Table 8.4.5.4.3-6: *ReportConfigEUTRA-A3*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12(-6 dB)	-6 is actual value in dB (-12 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			
}			

Table 8.4.5.4.3-7: *MeasResults*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.4.5.4.3-8: *MeasResultListEUTRA*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step6)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
measResult SEQUENCE {			
rsrpResult		Set according to specific test INTEGER(0..97)	
rsrqResult		Set according to specific test INTEGER(0..34)	
}			
}			

Table 8.4.5.4.3-9 *ReportConfigEUTRA-PERIODICAL*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step7)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-7 ReportConfigEUTRA-PERIODICAL			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-PERIODICAL ::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose	reportCGI		
}			
}			
reportAmount	1		
si-RequestForHO-r9	setup		
}			

Table 8.4.5.4.3-10: MeasGapConfig- Additional E-UTRAN FDD - FDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps test requirement (step7)

Derivation Path: 36.331, clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasGapConfig ::= CHOICE {			
release	NULL		
}			

Table 8.4.5.4.3-11: *MeasResultListEUTRA*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step10)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId	PhysicalCellIdentity		
cgi-Info SEQUENCE{			
cellGlobalId SEQUENCE{			
plmn-Identity	plmn-Identity		
cellIdentity	cellIdentity		
}			
trackingAreaCode			
plmn-IdentityList			
}			
}			

Table 8.4.5.4.3-12: *MeasObjectEUTRA-GENERIC*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-2 MeasObjectEUTRA-GENERIC			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-GENERIC(Freq) ::= SEQUENCE {			
cellForWhichToReportCGI	Physical Cell ID of Cell 2		Cell 1
}			

Table 8.4.5.4.3-13: *MeasConfig-DEFAULT*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step3)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1 MeasConfig-DEFAULT:			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
measGapConfig	MeasGapConfig-GP1		Gap Pattern Id = 0
}			

Table 8.4.5.4.3-14: *MeasConfig-DEFAULT*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step7)

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1 MeasConfig-DEFAULT:			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId))OF SEQUENCE {	1 entry		
reportConfigId	idReportConfig-P		
reportConfig	ReportConfigEUTRA-PERIODICAL		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) of SEQUENCE {	1 entry		
measId	2		
measObjectId	IdMeasObject-f2		
reportConfigId	IdReportConfig-P		
}			
}			

Table 8.4.5.4.3-15: *MeasResults*: Additional E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test requirement (step10)

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	2	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

8.4.5.5 Test requirement

Tables 8.4.5.4.1-1 ,8.4.5.5-1, 8.4.5.5-2 and 8.4.5.5-3 define the primary level settings including test tolerances for E-UTRAN TDD - TDD Inter-frequency identification of a new CGI of E-UTRA cell using autonomous gaps with DRX test.

Table 8.4.5.5-1: Cell Specific Test requirement 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	T3	T1	T2	T3
E-UTRA RF Channel Number		1			2		
$BW_{channel}$	MHz	10			10		
OCNG Patterns defined in D.2.1 (OP.1 TDD) and in D.2.2 (OP.2 TDD)		OP.1 TDD	OP.1 TDD	OP.1 TDD	OP.2 TDD	OP.2 TDD	OP.2 TDD
PBCH_RA	dB	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						
$\hat{E}_s/I_{ot}$	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 8.4.5.5-2: 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 section 6.3.2 in 3GPP TS 36.331[5]
drx-InactivityTimer	psf1	
drx-RetransmissionTimer	psf1	
longDRX-CycleStartOffset	sf1280	
shortDRX	disable	

Table 8.4.5.5-3: *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 section 6.3.2 in 3GPP TS 36.331[5]
sr-ConfigIndex	2	For further information see section 6.3.2 in 3GPP TS 36.331[5] and section10.1 in 3GPP TS 36.213[8].

The UE shall transmit a measurement report containing the cell global identifier of cell 2 within 170 milliseconds from the start of T3.

The overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Test requirement = RRC Procedure delay + $T_{identify\_CGI,\, inter}$ + TTI insertion uncertainty

RRC procedure delay=15ms

$$T_{identify\_CGI,\, inter} = T_{basic\_identify\_CGI,\, inter} \quad ms$$

$T_{basic\_identify\_CGI,inter}$ = 150 ms

TTI insertion uncertainty = 2 ms

The overall delays measured is 167 ms, allow 170 ms.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.5 E-UTRAN FDD - UTRAN measurements

8.5.1 E-UTRAN FDD - UTRAN FDD event triggered reporting under fading propagation conditions

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined
- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.5.1.1 Test purpose

To verify the UE's ability to make a correct reporting of an event under fading propagation conditions within the E-UTRA FDD - UTRA FDD cell search requirements.

8.5.1.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 8 and forward that support UTRA FDD. Applicability requires support for FGI bits 15 and 22.

8.5.1.3 Minimum conformance requirements

The measurement reporting delay shall be less than $T_{identify,\, UTRA\_FDD}$ in RRC_CONNECTED state.

When explicit neighbour list is provided and no DRX is used the UE shall be able to identify a new detectable cell within

$$T_{identify,\ UTRA\_FDD} = T_{basic\_identify\_UTRA\_FDD} \cdot \frac{480}{T_{inter1}} \cdot N_{Freq} \quad ms$$

Where:

$T_{basic\_identify\_UTRA\_FDD}$ = 300 ms. This is the time period used in the inter-RAT equation where the maximum allowed time for the UE to identify a new UTRA FDD cell is defined.

T_{Inter1} = 30 ms. This is the minimum available time for inter-RAT measurement during 480 ms period

N_{Freq}: This is the number of UTRA carriers being monitored

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.

When measurement gaps are scheduled for UTRA FDD inter RAT measurement the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in TS 36.133 [4] clause 9.2 of with measurement period given by

$$T_{measurement\_UTRA\_FDD} = Max\left\{T_{Measurement\_Period\ UTRA\_FDD}, T_{basic\_measurement\_UTRA\_FDD} \cdot \frac{480}{T_{inter1}} \cdot N_{Freq}\right\} ms$$

Where:

$X_{basic\ measurement\ UTRA\_FDD}$ = 6 (cells)

$T_{Measurement\_Period\ UTRA\_FDD}$ = 480 ms. The period used for calculating the measurement period.

$T_{basic\_measurement\_UTRA\_FDD}$ = 50 ms. This is the time period used in the equation where the maximum allowed time for the UE to identify a new UTRA FDD cell is defined.

T_{Inter1} = 30 ms. This is the minimum available time for inter-RAT measurement during 480 ms period

N_{Freq}: This is the number of UTRA carriers being monitored

If the UE does not need measurement gaps to perform UTRA FDD measurements, the measurement period for UTRA FDD measurements is 480 ms.

The UE shall be capable of performing UTRA FDD CPICH measurements for $X_{basic\ measurement\ UTRA\_FDD}$ 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 $T_{Measurement\_UTRA\_FDD}$.

Reported measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] 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 any events that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu 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: 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 TS 36.133 [4] clause 8.1.2.4.1.1.1. When L3 filtering is used an additional delay can be expected.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.4.1 and A.8.5.1.

8.5.1.4 Test description

8.5.1.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.23.
2. The general test parameter settings are set up according to Table 8.5.1.4.1-1.
3. Propagation conditions are set according to Annex B clauses B.0.
4. Message contents are defined in clause 8.5.1.4.3.
5. There is one E-UTRA FDD serving cell and one UTRA FDD cell specified in the test. Cell 1 (E-UTRA FDD cell) is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.5.1.4.1-1: General Test Parameters for E-UTRAN FDD- UTRAN FDD event triggered reporting under fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.2.1
Gap Pattern Id		1	As specified in 3GPP TS 36.133 [4] 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.
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/Io	
b1-Threshold-UTRA	dB	-18	CPICH Ec/Io 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	

8.5.1.4.2 Test procedure

The test consists of one active cell and one neighbour cell. 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 durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
2. Set the parameters according to T1 in Table's 8.5.1.5-1 and 8.5.1.5-2. Propagation conditions are set according to Annex B clauses B.1.1 and B.2.2.. T1 starts.
3. SS shall transmit an RRCConnectionReconfiguration message.
4. The UE shall transmit RRCConnectionReconfigurationComplete message.
5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table's 8.5.1.5-1 and 8.5.1.5-2.
6. UE shall transmit a MeasurementReport message triggered by Event B1. If the overall delay measured from the beginning of time period T2 is less than 4802 ms then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.
7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.
8. The SS shall set Cell 2 primary scrambling code = ((current cell 2 primary scrambling code - 50) mod 200 + 100) for the next iteration of the test procedure loop.
9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.5.1.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.5.1.4.3-1: Common Exception messages for E-UTRAN FDD - UTRAN FDD event triggered reporting under fading propagation conditions

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-4 Table H.3.1-7

Table 8.5.1.4.3-3: *ReportConfigInterRAT-B1-UTRA*: Additional E-UTRAN FDD - UTRAN FDD event triggered reporting under fading propagation conditions

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-7B ReportConfigInterRAT-B1(EUTRA-Thres)			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B1-UTRA(UTRA-Thres) ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventB1 SEQUENCE {			
b1-Threshold CHOICE {			
b1-ThresholdUTRA CHOICE {			
utra-EcN0	13 (-18 dB)	-18 dB is actual EcNO value in dB ((13 - 49)/2 dB)	
}			
}			
}			
}			
hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
}			
}			
}			

Table 8.5.1.4.3-4: *MeasResults*: Additional E-UTRAN FDD - UTRAN FDD event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListUTRA	MeasResultListUTRA		
}			
}			

Table 8.5.1.4.3-5: *MeasResultListUTRA*: Additional E-UTRAN FDD - UTRAN FDD event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId CHOICE {			
fdd	250	PhysCellIdUTRA-FDD INTEGER (0..511)	
}			
measResult SEQUENCE {			
utra-EcN0		Set according to specific test	
}			
}			

8.5.1.5 Test requirement

Tables 8.5.1.4.1-1, 8.5.1.5-1 and 8.5.1.5-2 define the primary level settings including test tolerances for E-UTRAN FDD - UTRAN FDD event triggered reporting under fading propagation conditions in synchronous cells test.

Table 8.5.1.5-1: Cell Specific Test requirement 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	
OCNG Pattern defined in D.1.1 (OP.1 FDD)		OP.1 FDD	
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	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 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 8.5.1.5-2: Cell Specific Test requirement Parameters for Cell 2 UTRAN FDD event triggered reporting 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}. Note 3: Case 5 propagation conditions are defined in Annex A of 3GPP TS 25.101.			

The overall delays measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event B1 triggered measurement report to Cell 2.

The overall delays measured in the test may be up to 2xTTI$_{DCCH}$ higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify,\ UTRA\_FDD}$

$$T_{identify,\ UTRA\_FDD} = T_{basic\_identify\_UTRA\_FDD} \cdot \frac{480}{T_{inter1}} \cdot N_{Freq} \quad ms$$

$T_{basic\_identify\_UTRA\_FDD} = 300$ ms

$T_{Inter1} = 30$ ms

$N_{Freq} = 1$

TTI insertion uncertainty = 2 ms

The overall delays measured shall be less than a total of 4802 ms in this test case (note: this gives a total of 4800 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.5.2 E-UTRAN FDD - UTRAN FDD SON ANR cell search reporting under AWGN propagation conditions

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined
- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.5.2.1 Test purpose

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 TS36.133 [4] section 8.1.2.4.7.1. 1.

8.5.2.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 8 and forward that support UTRA FDD. Applicability requires support for FGI bits 5, 19 and 22.

8.5.2.3 Minimum conformance requirements

When no DRX is used the UE shall be able to identify a new cell within:

$$\mathrm{T}_{\text{identify, UTRA\_FDD}} = \mathrm{T}_{\text{basic\_identify\_UTRA\_FDD}} \cdot \frac{480}{\text{Tinter1}} \cdot N_{Freq} \quad ms$$

$\mathrm{T}_{\text{basic\_identify\_UTRA\_FDD}}$ = 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 $\geq$ -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*$\mathrm{T}_{\text{identify, UTRA\_FDD}}$ ms, the UE may stop searching UTRA cells for SON.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.4.7 and A.8.5.2.

8.5.2.4 Test description

8.5.2.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.22.
2. The general test parameter settings are set up according to Table 8.5.2.4.1-1.
3. Propagation conditions are set according to Annex B clauses B.0.
4. Message contents are defined in clause 8.5.2.4.3.
5. There is one E-UTRA FDD serving cell and one UTRA FDD cell specified in the test. Cell 1 (E-UTRA FDD cell) is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.5.2.4.1-1: 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 section A.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in section A.2.1.
Gap Pattern Id		1	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.
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/Io	
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	

8.5.2.4.2 Test procedure

The test consists of one active E-UTRAN cell and one neighbour UTRAN cell. 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 durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Tables 8.5.2.5-1 and 8.5.2.5-2. Propagation conditions are set according to Annex B clauses B.1.1. T1 starts.

3. The SS shall set Cell 2 primary scrambling code = ((current cell 2 primary scrambling code - 50) mod 200 + 100) for next iteration of the test procedure loop.

4. SS shall transmit an RRCConnectionReconfiguration message.

5. The UE shall transmit RRCConnectionReconfigurationComplete message.

6. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Tables 8.5.2.5-1 and 8.5.2.5-2.

7. The UE shall transmit a MeasurementReport message containing the primary scrambling code of cell 2. If the overall delays measured from the beginning of time period T2 is less than 4802 ms then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

8. After the SS receive the MeasurementReport message in step 7) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),

or
- switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.5.2.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.5.2.4.3-1: Common Exception messages for E-UTRAN FDD-UTRAN FDD cell search reporting for SON ANR in AWGN propagation conditions

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-7

Table 8.5.2.4.3-2: *MeasConfig-DEFAULT*: Additional E-UTRAN FDD-UTRAN FDD cell search reporting for SON ANR in AWGN propagation conditions

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1 MeasConfig-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
measObjectToRemoveList	Not present		
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF MeasObjectToAddMod	2 entry		
MeasObjectToAddMod ::= SEQUENCE {			
measObjectId	IdMeasObject-f1	f1 is the frequency of the serving cell (E-UTRA Cell)	
measObject CHOICE {			
MeasObjectEUTRA	MeasObjectEUTRA-GENERIC(f1)	E-UTRA Cell	
}			
}			
MeasObjectToAddMod ::= SEQUENCE {			
measObjectId	IdMeasObject-f2	f2 is the frequency of the neighbouring cell(UTRA Cell)	
measObject CHOICE {			
MeasObjectUTRA	MeasObjectUTRA-GENERIC(f2)	UTRA Cell	
}			
}			
reportConfigToRemoveList	Not present		
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId))OF ReportConfigToAddMod	1 entry		
ReportConfigToAddMod ::= SEQUENCE {			
reportConfigId	idReportConfig		
reportConfig CHOICE {			
reportConfigInterRAT	ReportConfigInterRAT-SON-UTRA		
}			
}			
measIdToRemoveList	Not present		
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) of MeasIdToAddMod	1 entry		
MeasIdToAddMod ::= SEQUENCE {			
measId	1		
measObjectId	IdMeasObject-f2		
reportConfigId	idReportConfig		
}			
quantityConfig	QuantityConfig-DEFAULT		
measGapConfig	MeasGapConfig-GP2		
s-Measure	Not present		
preRegistrationInfoHRPD	Not present		
speedStatePars	Not present		
}			

Table 8.5.2.4.3-3: *ReportConfigInterRAT-SON-UTRA*: Additional E-UTRAN FDD-UTRAN FDD cell search reporting for SON ANR in AWGN propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-SON-UTRA::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose ENUMERATED {	reportStrongestCellsForSON		
}			
}			
}			
maxReportCells	1		
reportInterval	ms1024		
reportAmount	1		
}			

Table 8.5.2.4.3-4: *MeasResults*: Additional E-UTRAN FDD-UTRAN FDD cell search reporting for SON ANR in AWGN propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListUTRA	MeasResultListUTRA		
}			
}			

Table 8.5.2.4.3-5: *MeasResultListUTRA*: Additional E-UTRAN FDD-UTRAN FDD cell search reporting for SON ANR in AWGN propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultUTRA			
MeasResultUTRA ::= SEQUENCE {			
physCellId CHOICE {			
fdd	PhysCellIdUTRA-FDD	The primary scrambling code, as defined in TS 25.331	
}			
measResult SEQUENCE {			
utra-EcN0		Set according to specific test	
}			
}			
}			
}			

8.5.2.5 Test requirement

Tables 8.5.2.4.1-1, 8.5.2.5-1 and 8.5.2.5-2 define the primary level settings including test tolerances for UTRAN FDD cell search for SON ANR under AWGN propagation conditions test.

Table 8.5.2.5-1: Cell specific test parameters for E-UTRAN FDD (cell # 1) for UTRAN FDD cell search for SON ANR under AWGN propagation conditions

Parameter	Unit	Cell 1	
		T1	T2
E-UTRA RF Channel Number		1	
$BW_{channel}$	MHz	10	
OCNG Pattern defined in D.1.1 (OP.1 FDD)		OP.1 FDD	
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	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		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.
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 8.5.2.5-2: 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/Ior	dB	-10	
PCCPCH_Ec/Ior	dB	-12	
SCH_Ec/Ior	dB	-12	
PICH_Ec/Ior	dB	-15	
DPCH_Ec/Ior	dB	N/A	
OCNS		-0.941	
$\hat{I}_{or}/I_{oc}$	dB	-Infinity	-2.95
I_{oc}	dBm/3.84 MHz	-70	
CPICH_Ec/Io	dB	-Infinity	-14.73
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}			

The UE shall send the first measurement report containing the primary scrambling code of cell 2, with a measurement reporting delay less than 4802 ms from the beginning of time period T2.

When no DRX is used the UE shall be able to identify a new cell within:

$$T_{\text{identify, UTRA\_FDD}} = T_{\text{basic\_identify\_UTRA\_FDD}} \cdot \frac{480}{\text{Tinter1}} \cdot N_{Freq} \quad ms$$

Where:

$T_{\text{basic\_identify\_UTRA\_FDD}}$ = 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.

T_{Inter1} = 30 ms. TTI insertion uncertainty = 2 ms

The overall delays measured shall be less than a total of 4802 ms in this test case (note: this gives a total of 4800 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

The rate of correct measurement reports observed with this delay during repeated tests shall be at least 90% with a confidence level of 95%.

8.5.3 E-UTRAN FDD - UTRAN FDD event triggered reporting when DRX is used under fading propagation conditions

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined
- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.5.3.1 Test purpose

To verify the UE's ability to make a correct reporting of an event in DRX under fading propagation conditions within the E-UTRA FDD - UTRA FDD cell search requirements.

8.5.3.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 8 and forward that support UTRA FDD. Applicability requires support for FGI bits 5, 15 and 22.

8.5.3.3 Minimum conformance requirements

The measurement reporting delay shall be less than $T_{identify,\ UTRA\_FDD}$ in RRC_CONNECTED state.

When explicit neighbour list is provided and DRX is used the UE shall be able to identify a new detectable cell belonging to the neighbour cell list within Tidentify, UTRA_FDD as in table 8.5.3.3-1.

Table 8.5.3.3-1: Requirements to identify a newly detectable UTRA FDD cell

DRX cycle length (s)	$T_{identify\_UTRA\_FDD}$ (s) (DRX cycles)	
	Gap period = 40 ms	Gap period = 80 ms
≤0.04	Non DRX Requirements in TS 36.133 [4] section 8.1.2.4.1.1 are applicable	Non DRX Requirements in TS 36.133 [4] section 8.1.2.4.1.1 are applicable
0.064	2.56* Nfreq (40* Nfreq)	4.8* Nfreq (75* Nfreq)
0.08	3.2* Nfreq (40* Nfreq)	4.8* Nfreq (60* Nfreq)
0.128	3.2* Nfreq (25* Nfreq)	4.8* Nfreq (37.5* Nfreq)
0.16	3.2* Nfreq (20* Nfreq)	4.8* Nfreq (30* Nfreq)
0.16<DRX-cycle≤2.56	Note (20* Nfreq)	Note (20* Nfreq)
Note: Time depends upon the DRX cycle in use		

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.

The UE shall be capable of performing RSCP and Ec/Io measurements of at least 6 UTRA cells per UTRA FDD carrier 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 8.5.3.3-2.

Table 8.5.3.3-2: Requirements to measure UTRA FDD cells

DRX cycle length (s)	$T_{measure\_UTRA\_FDD}$ (s) (DRX cycles)	
	Gap period = 40 ms	Gap period = 80 ms
≤0.04	Non DRX Requirements in TS 36.133 [4] section 8.1.2.4.1.1 are applicable	Non DRX Requirements in TS 36.133 [4] section 8.1.2.4.1.1 are applicable
0.064	0.48* N_{freq} (7.5* N_{freq})	0.8* N_{freq} (12.5* N_{freq})
0.08	0.48* N_{freq} (6* N_{freq})	0. 8* N_{freq} (10* N_{freq})
0.128	0.64* N_{freq} (5* N_{freq})	0. 8* N_{freq} (6.25* N_{freq})
0.128<DRX-cycle≤2.56	Note (5* N_{freq})	Note (5* N_{freq})
Note: Time depends upon the DRX cycle in use		

The measurement accuracy for all measured cells shall be as specified in TS 36.133 [4] clause 9.1.

Reported measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] 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 any events that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu 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: 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 TS 36.133 [4] clause 8.1.2.4.1.1.1. When L3 filtering is used an additional delay can be expected.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.4.1.2 and A.8.5.3.

8.5.3.4 Test description

8.5.3.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.23.
2. The general test parameter settings are set up according to Table 8.5.3.4.1-1.
3. Propagation conditions are set according to Annex B clauses B.0.
4. Message contents are defined in clause 8.5.3.4.3.
5. There is one E-UTRA FDD serving cell and one UTRA FDD cell specified in the test. Cell 1 (E-UTRA FDD cell) is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.5.3.4.1-1: General Test Parameters for E-UTRAN FDD- UTRAN FDD event triggered reporting when DRX is used under fading propagation conditions

Parameter	Unit	Test 1	Test 2	Comment
		Value		
PDSCH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD		As specified in section A.1.1 Note that UE may only be allocated at *On Duration*
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD		As specified in section A.2.1.
Gap Pattern Id		0		As specified in 3GPP TS 36.133 [4] 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.
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/Io		
b1-Threshold-UTRA	dB	-18		CPICH Ec/Io 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 [9]
Access Barring Information	-	Not Sent		No additional delays in random access procedure.
DRX		ON		DRX related parameters are defined in Table 8.5.3.5-2
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	30	

8.5.3.4.2 Test procedure

The test consists of one active cell and one neighbour cell. 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 durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

In Test 1 when DRX = 40 ms is used, UE needs to be provided at least once every 500 ms with new Timing Advance Command MAC control element to restart the Timer Alignment Timer to keep the UE uplink time alignment. Furthermore, the UE is allocated with PUSCH resource at every DRX cycle. In Test 2 when DRX = 1280 ms is used, the uplink time alignment is not maintained and the UE needs to use RACH to obtain uplink allocation for measurement reporting.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
2. Set the parameters according to T1 in Table 8.5.3.5-1, 8.5.3.5-2, 8.5.3.5-3 and 8.5.3.5-5. Propagation conditions are set according to Annex B clauses B.1.1 and B.2.2. T1 starts.
3. SS shall transmit an RRCConnectionReconfiguration message.
4. The UE shall transmit RRCConnectionReconfigurationComplete message.
5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table’s 8.5.3.5-1 and 8.5.3.5-4. T2 starts.
6. UE shall transmit a MeasurementReport message triggered by Event B1. If the overall delays measured from the beginning of time period T2 is less than 2442 ms for Test 1 or less than 26882 ms for Test 2 then the number of

successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. The SS shall set Cell 2 primary scrambling code = ((current cell 2 primary scrambling code - 50) mod 200 + 100) for next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

11. Repeat step 1-10 for each sub-test in Table 8.3.2.4.1-1 as appropriate.

8.5.3.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.5.3.4.3-1: Common Exception messages for E-UTRAN FDD - UTRAN FDD event triggered reporting when DRX is used under fading propagation conditions

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-4 Table H.3.1-7 Table H.3.7-1 Table H.3.7-2 Table H.3.7-3

Table 8.5.3.4.3-2: *RRCConnectionReconfiguration*: Additional E-UTRAN FDD - UTRAN FDD event triggered reporting when DRX is used under fading propagation conditions

Derivation Path: TS 36.508 [7] clause 4.6.1, Table 4.6.1-8 RRCConnectionReconfiguration			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier-DL		
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
measConfig	MeasConfig -DEFAULT		
radioResourceConfigDedicated	RadioResourceConfigDedicated-HO		
}			
}			
}			
}			

Table 8.5.3.4.3-3: *ReportConfigInterRAT-B1-UTRA*: Additional E-UTRAN FDD - UTRAN FDD event triggered reporting when DRX is used under fading propagation conditions

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-7B ReportConfigInterRAT-B1(EUTRA-Thres)			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B1-UTRA(UTRA-Thres) ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventB1 SEQUENCE {			
b1-Threshold CHOICE {			
b1-ThresholdUTRA CHOICE {			
utra-EcN0	13 (-18 dB)	-18 dB is actual EcNO value in dB ((13 - 49)/2 dB)	
}			
}			
}			
}			
hysteresis	0(0 dB)		
}			
}			
}			

Table 8.5.3.4.3-4: *SchedulingRequest-Config-DEFAULT*: Additional E-UTRAN FDD - UTRAN FDD event triggered reporting when DRX is used under fading propagation conditions

Derivation Path: TS 36.508 [7] clause 4.6.3, Table 4.6.3-20 SchedulingRequest-Config-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequest-Config-DEFAULT ::= CHOICE {			
setup SEQUENCE {			
sr-PUCCH-ResourceIndex	41	10 MHz channel bandwidth parameter	
sr-ConfigIndex	0		
dsr-TransMax	n4		
}			
}			

Table 8.5.3.4.3-5: *MeasResults*: Additional E-UTRAN FDD - UTRAN FDD event triggered reporting when DRX is used under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListUTRA	MeasResultListUTRA		
}			
}			

Table 8.5.3.4.3-6: *MeasResultListUTRA*: Additional E-UTRAN FDD - UTRAN FDD event triggered reporting when DRX is used under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId CHOICE {			
fdd	250	PhysCellIdUTRA-FDD	
}			
measResult SEQUENCE {			
utra-EcN0		Set according to specific test	
}			
}			

Table 8.5.3.4.3-7: *PRACH-Config-DEFAULT*: Additional E-UTRAN FDD - UTRAN FDD event triggered reporting when DRX is used under fading propagation conditions

Derivation Path: TS 36.508 [7] clause 7.3.2 Table 7.3.2-1			
Information Element	**Value/remark**	**Comment**	**Condition**
PRACH-Config-DEFAULT ::= SEQUENCE {			
prach-ConfigIndex	4		
}			

8.5.3.5 Test requirement

Tables 8.5.3.4.1-1, 8.5.3.5-1 and 8.5.3.5-4 define the primary level settings including test tolerances for E-UTRAN FDD - UTRAN FDD event triggered reporting under fading propagation conditions in synchronous cells test.

Table 8.5.3.5-1: Cell Specific Test requirement Parameters for Cell 1 E-UTRAN FDD event triggered reporting when DRX is used under fading propagation conditions

Parameter	Unit	Cell 1	
		T1	T2
E-UTRA RF Channel Number		1	
$BW_{channel}$	MHz	10	
OCNG Pattern defined in D.1.1 (OP.1 FDD)		OP.1 FDD	
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	dB		
OCNG_RA Note 1	dB		
OCNG_RB Note 1	dB		

$\hat{E}_s/I_{ot}$	dB	4	4
N_{oc} 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 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 8.5.3.5-2: 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
	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 section 6.3.2 in 3GPP TS 36.331 [5].			

Table 8.5.3.5-3: *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
	Value	Value	
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331 [5].
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213 [8].

Table 8.5.3.5-4: Cell Specific Test requirement Parameters for Cell 2 UTRAN FDD event triggered reporting when DRX is used under fading propagation conditions

Parameter	Unit	Cell 2	
		T1	T2
UTRA RF Channel Number		1	
CPICH_Ec/Ior	dB	-10	
PCCPCH_Ec/Ior	dB	-12	
SCH_Ec/Ior	dB	-12	
PICH_Ec/Ior	dB	-15	
DPCH_Ec/Ior	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}. Note 3: Case 5 propagation conditions are defined in Annex A of 3GPP TS 25.101.			

In Test 1 when DRX cycle length = 40 ms is used, the overall delay measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event B1 triggered measurement report to Cell 2 on PUSCH.

In Test 2 when DRX cycle length = 1280 ms is used, the overall delay measured is defined as the time from the beginning of time period T2, to the moment the UE starts to send preambles on the PRACH for Scheduling Request (SR) to obtain allocation to send the measurement report to Cell 2 on PUSCH.

For both tests:

The overall delays measured when DRX cycle length is 40 ms in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

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.

The overall delay measured when DRX cycle length is 40 ms test requirement is expressed as:

Overall delay measured = measurement reporting delay + TTI insertion uncertainty + DRX cycle length

Measurement reporting delay = $T_{identify,\ UTRA\_FDD}$=

$$T_{identify,\ UTRA\_FDD} = T_{basic\_identify\_UTRA\_FDD} \cdot \frac{480}{T_{inter1}} \cdot N_{Freq} \quad ms$$

Where:

$T_{basic\_identify\_UTRA\_FDD}$ = 300 ms. It is the time period used in the inter RAT equation where the maximum allowed time for the UE to identify a new UTRA FDD cell is defined.

T_{Inter1} = 60 ms.

N_{freq} = 1. It is defined in TS 36.133 [4] clause 8.1.2.1.1.

TTI insertion uncertainty = 2 ms

DRX cycle length = 40 ms

The overall delay measured when DRX cycle length is 40 ms shall be less than a total of 2442 ms.

The overall delay measured when DRX cycle length is 1280 ms test requirement is expressed as:

Overall delay measured = measurement reporting delay + TTI insertion uncertainty + DRX cycle length

Measurement reporting delay = $T_{identify\_UTRA\_FDD}$

$T_{identify\_UTRA\_FDD}$ = 25600 ms. When DRX cycle length is 1280 ms the $T_{identify\_UTRA\_FDD}$ is 20 x 1280 ms.

TTI insertion uncertainty = 2 ms

DRX cycle length = 1280 ms

The overall delay measured when DRX cycle length is 1280 ms shall be less than a total of 26882 ms.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.5.4 E-UTRAN FDD - UTRAN FDD enhanced cell identification under AWGN propagation conditions

8.5.4.1 Test purpose

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 section 8.1.2.4.1.1.1a.

8.5.4.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 9 and forward that support UTRA FDD. Applicability requires support for FGI bit 15.

8.5.4.3 Minimum conformance requirements

When explicit neighbour list is provided and no DRX is used or when DRX cycle length ≤ 40 ms the UE shall be able to identify a new detectable cell belonging to the monitored set within $T_{identify,\ enhanced\_UTRA\_FDD}$:

$$T_{identify,\ enhanced\_UTRA\_FDD} = (T_{basic\_identify\_enhanced\_UTRA\_FDD} \cdot \frac{480}{T_{inter1}} + 480)\ N_{Freq} \quad ms$$

A cell shall be considered detectable when:

- CPICH Ec/Io ≥ -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.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.4.1.1.1a and A.8.5.4.

8.5.4.4 Test description

8.5.4.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.22.

2. The general test parameter settings are set up according to Table 8.5.4.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.5.4.4.3.

5. There is one E-UTRA FDD serving cell and one UTRA FDD cell specified in the test. Cell 1 (E-UTRA FDD cell) is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test. Cell 2 (UTRAN FDD cell) is to be searched. Gap pattern configuration # 0 as defined in TS 36.133 [4] table 8.1.2.1-1 is provided.

Table 8.5.4.4.1-1: 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 section A.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in section A.2.1.
Gap Pattern Id		0	As specified in 3GPP TS 36.133[4] 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.
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/Io	
b1-Threshold-UTRA	dB	-18	CPICH Ec/Io threshold for event B1.
Hysteresis	dB	0	
Time To Trigger	ms	0	
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	

8.5.4.4.2 Test procedure

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.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Tables 8.5.4.5-1 and 8.5.4.5-2. Propagation conditions are set according to Annex B clause B.1.1. T1 starts.

3. The SS shall transmit an *RRCConnectionReconfiguration* with Event B1 configured message.

4. The UE shall transmit *RRCConnectionReconfigurationComplete* message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Tables 8.5.4.5-1 and 8.5.4.5-2. T2 starts.

6. UE shall transmit a *MeasurementReport* message triggered by Event B1. If the overall delay measured from the beginning of time period T2 is less than 962 ms then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit *RRCConnectionRelease* message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. The SS shall set Cell 2 primary scrambling code = ((current cell 2 primary scrambling code - 50) mod 200 + 100) for next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.5.4.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.5.4.4.3-1: Common Exception messages for E-UTRAN FDD - UTRAN FDD enhanced cell identification under AWGN propagation conditions

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-4 Table H.3.1-7

Table 8.5.4.4.3-2: *ReportConfigInterRAT-B1-UTRA*: Additional E-UTRAN FDD - UTRAN FDD enhanced cell identification under AWGN propagation conditions

Derivation Path: TS 36.508[7] clause 4.6.6 Table 4.6.6-7B			
Information Element	Value/remark	Comment	Condition
ReportConfigInterRAT-B1-UTRA(UTRA-Thres) ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventB1 SEQUENCE {			
b1-Threshold CHOICE {			
b1-ThresholdUTRA CHOICE {			
utra-EcN0	13 (-18 dB)	UTRA-Thres is actual Ec/No value in dB (UTRA-Thres * 2 + 49)	UTRA-FDD
}			
}			
}			
}			
hysteresis	0 (0dB)	The actual value is IE value * 0.5 dB.	
timeToTrigger	ms0		
}			
}			
}			

Table 8.5.4.4.3-3: *MeasResults*: Additional E-UTRAN FDD - UTRAN FDD enhanced cell identification under AWGN propagation conditions

Derivation Path: TS 36.331[5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListUTRA	MeasResultListUTRA		
}			
}			

Table 8.5.4.4.3-4: *MeasResultListUTRA*: E-UTRAN FDD - UTRAN FDD enhanced cell identification under AWGN propagation conditions

Derivation Path: TS 36.331[5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId CHOICE {			
fdd	PhysCellIdUTRA-FDD	INTEGER (0..511)	
}			
measResult SEQUENCE {			
utra-EcN0		Set according to specific test INTEGER (0..49)	
}			
}			

8.5.4.5 Test requirement

Tables 8.5.4.4.1-1, 8.5.4.5-1 and 8.5.4.5-2 define the primary level settings including test tolerances for E-UTRAN FDD - UTRAN FDD enhanced cell identification under AWGN propagation conditions test.

Table 8.5.4.5-1: 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 D.1.1 (OP.1 FDD)		OP.1 FDD	
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	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		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.
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 8.5.4.5-2: 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/Ior	dB	-10	
PCCPCH_Ec/Ior	dB	-12	
SCH_Ec/Ior	dB	-12	
PICH_Ec/Ior	dB	-15	
DPCH_Ec/Ior	dB	N/A	
OCNS		-0.941	
$\hat{I}_{or}/I_{oc}$	dB	- infinity	0.02
I_{oc}	dBm/3.84 MHz	-70	
CPICH_Ec/Io Note 3	dB	- infinity	-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/Io of -15dB

The overall delays measured is defined as the time from the beginning of time period T2, to the moment the UE send the first measurement report containing the primary scrambling code of cell 2.

The actual overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify, enhanced\_UTRA\_FDD}$

$$T_{identify,\ enhanced\_UTRA\_FDD} = (T_{basic\_identify\_enhanced\_UTRA\_FDD} \cdot \frac{480}{T_{inter1}} + 480)\ N_{Freq} \quad ms$$

$T_{basic\_identify\_enhanced\_UTRA\_FDD}$ = 60 ms. This is the time period used in the inter RAT equation in TS 36.133[4] section 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_{Inter1} = 60 ms. It is defined in TS 36.133 [4] section 8.1.2.1.

N_{Freq} = 1. It is defined in TS 36.133 [4] clause 8.1.2.1.1.

TTI insertion uncertainty = 2 ms

The overall delays measured shall be less than a total of 962 ms in this test case (note: this gives a total of 960 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.5.5

FFS

8.5.6 E-UTRAN FDD - UTRAN FDD event triggered reporting without measurement gaps under AWGN propagation conditions

Editor's note: This test case is incomplete. The following aspects are either missing or not yet determined:

- Message contents are FFS
- The Test system uncertainties applicable to this test are undefined
- The Test tolerances applicable to this test are undefined

8.5.6.1 Test purpose

To verify the UE's ability to make a correct reporting of an event without measurement gaps within the E-UTRA FDD - UTRA FDD cell search requirements.

8.5.6.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 10 and forward that support UTRA FDD. Applicability requires support for FGI bits 15 and 22.

8.5.6.3 Minimum conformance requirements

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

$$T_{\text{identify, UTRA\_FDD}} = T_{\text{basic\_identify\_UTRA\_FDD}} \cdot \frac{480}{T_{\text{inter1}}} \cdot N_{Freq} \quad ms$$

A cell shall be considered detectable when

- CPICH Ec/Io $\geq$ -20 dB,
- SCH_Ec/Io $\geq$ -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.

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 TS 36.133 [4] clause 9.2 with measurement period given by

$$T_{\text{measurement\_UTRA\_FDD}} = Max\left\{T_{\text{Measurement\_Period UTRA\_FDD}}, T_{\text{basic\_measurement\_UTRA\_FDD}} \cdot \frac{480}{T_{\text{inter1}}} \cdot N_{Freq}\right\} ms$$

The UE shall be capable of performing UTRA FDD CPICH measurements for $X_{\text{basic measurementUTRA\_FDD}}$ 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 $T_{\text{Measurement\_UTRA\_FDD}}$.

$X_{\text{basic measurement UTRA\_FDD}} = 6$

$T_{\text{Measurement\_Period UTRA\_FDD}}$ = 480 ms. The period used for calculating the measurement period $T_{\text{measurement\_UTRA\_FDD}}$ for UTRA FDD CPICH measurements.

$T_{\text{basic\_identify\_UTRA\_FDD}}$ = 300 ms. This is the time period used in the inter RAT equation in TS 36.133 [4] 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.

$T_{\text{basic\_identify\_enhanced\_UTRA\_FDD}}$ = 60 ms. This is the time period used in the inter RAT equation in TS 36.133 [4] 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.

$T_{\text{basic\_measurement\_UTRA\_FDD}}$ = 50 ms. This is the time period used in the equation for defining the measurement period for inter RAT CPICH measurements.

N_{freq} is defined in clause 8.1.2.1.1 and T_{inter1} is defined in TS 36.133 [4] clause 8.1.2.1

Reported measurements in event triggered measurement reports shall meet the requirements in TS 36.133 [4] 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 $T_{\text{identify, UTRA\_FDD}}$ defined in TS 36.133 [4] clause 8.1.2.4.1.1.1 for the minimum requirements or $T_{\text{identify, enhanced\_UTRA\_FDD}}$ defined in TS 36.133 [4] clause 8.1.2.4.1.1.1a for the enhanced requirements When L3 filtering is used or IDC autonomous denial is configured an additional delay can be expected.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.4.1 and A.8.5.6.

8.5.6.4 Test description

8.5.6.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.23.

2. The general test parameter settings are set up according to Table 8.5.6.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.5.6.4.3.

5. There is one E-UTRA FDD serving cell and one UTRA FDD cell specified in the test. Cell 1 (E-UTRA FDD cell) is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 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 Channel R.0 FDD	As specified in clause A.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in clause A.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/Io	
b1-Threshold-UTRA	dB	-18	CPICH Ec/Io 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	

8.5.6.4.2 Test procedure

The test consists of one active E-UTRAN cell and one neighbour UTRAN cell. 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.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table's 8.5.6.5-1 and 8.5.6.5-2. Propagation conditions are set according to Annex B clauses B.1.1. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table's 8.5.6.5-1 and 8.5.6.5-2.

6. UE shall transmit a MeasurementReport message triggered by Event B1. If the overall delay measured from the beginning of time period T2 is less than 4802 ms and at least 85% of all ACK/NACKS transmitted by the UE are detected by the system simulator until the measurement report is received during T2 the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement or less than 85% of all ACK/NACKS transmitted by the UE are detected by the system simulator then the number of failure tests is increased by one.

7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. The SS shall set Cell 2 primary scrambling code = ((current cell 2 primary scrambling code - 50) mod 200 + 100) for the next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including Paging Record with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.5.6.4.3 Message contents

FFS

8.5.6.5 Test requirement

Tables 8.5.6.4.1-1, 8.5.6.5-1 and 8.5.6.5-2 define the primary level settings including test tolerances for E-UTRAN FDD - UTRAN FDD event triggered reporting without measurement gaps under AWGN propagation conditions test.

Table 8.5.6.5-1: 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	10	
OCNG Pattern defined in A.3.2.1.1 (OP.1 FDD)		OP.1 FDD	
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	dB		
OCNG_RA Note 1	dB		
OCNG_RB Note 1	dB		

$\hat{E}_s/I_{ot}$	dB	4+TT	4+TT
$\hat{E}_s/N_{oc}$	dB	4+TT	4+TT
N_{oc}	dBm/15 kHz	-98	
RSRP	dBm/15 kHz	-94+TT	-94+TT
SCH_RP	dBm/15 kHz	-94+TT	-94+TT
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 8.5.6.5-2: 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/Ior	dB	-10	
PCCPCH_Ec/Ior	dB	-12	
SCH_Ec/Ior	dB	-12	
PICH_Ec/Ior	dB	-15	
DPCH_Ec/Ior	dB	N/A	
OCNS		-0.941	
$\hat{I}_{or}/I_{oc}$	dB	-Infinity	-1.8+TT
I_{oc}	dBm/3.84 MHz	-70	
CPICH_Ec/Io	dB	-Infinity	-14+TT
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}.			

The overall delays measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event B1 triggered measurement report to Cell 2.

The overall delays measured in the test may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify, UTRA\_FDD}$

$$T_{identify,\ UTRA\_FDD} = T_{basic\_identify\_UTRA\_FDD} \cdot \frac{480}{T_{inter1}} \cdot N_{Freq} \quad ms$$

$T_{basic\_identify\_UTRA\_FDD}$ = 300 ms

T_{Inter1} = 30 ms

N_{Freq} = 1

TTI insertion uncertainty = 2 ms

The overall delays measured shall be less than a total of 4802 ms in this test case (note: this gives a total of 4800 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

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.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.6 E-UTRAN TDD - UTRAN FDD measurements

8.6.1 E-UTRAN TDD - UTRAN FDD event triggered reporting under fading propagation conditions

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined
- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.6.1.1 Test purpose

To verify the UE's ability to make a correct reporting of an event under fading propagation conditions within the E-UTRA TDD - UTRA FDD cell search requirements.

8.6.1.2 Test applicability

This test applies to all types of E-UTRA TDD UE release 8 and forward that support UTRA FDD. Applicability requires support for FGI bits 15 and 22.

8.6.1.3 Minimum conformance requirements

The measurement reporting delay shall be less than $T_{identify, UTRA\_FDD}$ in RRC_CONNECTED state.

When explicit neighbour list is provided and no DRX is used the UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{identify,\ UTRA\_FDD} = T_{basic\_identify\_UTRA\_FDD} \cdot \frac{480}{T_{inter1}} \cdot N_{Freq} \quad ms$$

Where:

$T_{basic\_identify\_UTRA\_FDD}$ = 300 ms. This is the time period used in the inter-RAT equation where the maximum allowed time for the UE to identify a new UTRA FDD cell is defined.

T_{Inter1} = 30 ms. This is the minimum available time for inter-RAT measurement during 480 ms period

N_{Freq}: This is the number of UTRA carriers being monitored

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.

When measurement gaps are scheduled for UTRA FDD inter RAT measurement the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in TS 36.133 [4] clause 9.2 of with measurement period given by

$$T_{measurement\_UTRA\_FDD} = Max\left\{T_{Measurement\_Period\ UTRA\_FDD}, T_{basic\_measurement\_UTRA\_FDD} \cdot \frac{480}{T_{inter1}} \cdot N_{Freq}\right\} ms$$

Where:

$X_{basic\ measurement\ UTRA\_FDD}$ = 6 (cells)

$T_{Measurement\_Period\ UTRA\_FDD}$ = 480 ms. The period used for calculating the measurement period.

$T_{basic\_measurement\_UTRA\_FDD}$ = 50 ms. This is the time period used in the equation where the maximum allowed time for the UE to identify a new UTRA FDD cell is defined.

T_{Inter1} = 30 ms. This is the minimum available time for inter-RAT measurement during 480 ms period

N_{Freq}: This is the number of UTRA carriers being monitored

If the UE does not need measurement gaps to perform UTRA FDD measurements, the measurement period for UTRA FDD measurements is 480 ms.

The UE shall be capable of performing UTRA FDD CPICH measurements for $X_{basic\ measurement\ UTRA\_FDD}$ 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 $T_{Measurement\_UTRA\_FDD}$.

Reported measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] 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 any events that will trigger a measurement report until the UE starts to transmit the measurement report over the Uu 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: 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 TS 36.133 [4] clause 8.1.2.4.1.1.1. When L3 filtering is used an additional delay can be expected.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.4.2 and A.8.6.1.

8.6.1.4 Test description

8.6.1.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.23.
2. The general test parameter settings are set up according to Table 8.6.1.4.1-1.
3. Propagation conditions are set according to Annex B clauses B.0.
4. Message contents are defined in clause 8.6.1.4.3.
5. There is one E-UTRA TDD serving cell and one UTRA FDD cell specified in the test. Cell 1 (E-UTRA TDD cell) is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.6.1.4.1-1: 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 section A.1.2.
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in section A.2.2.
Gap Pattern Id		1	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.
Special subframe configuration		6	As specified in table 4.2-1 in 3GPP TS 36.211. Applicable to cell 1.
Uplink-downlink configuration		1	As specified in table 4.2-2 in 3GPP 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/Io 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	

8.6.1.4.2 Test procedure

The test consists of one active cell and one neighbour cell. 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 durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
2. Set the parameters according to T1 in Table's 8.6.1.5-1 and 8.6.1.5-2. Propagation conditions are set according to Annex B clause B.1.1 and B.2.2.. T1 starts.
3. SS shall transmit an RRCConnectionReconfiguration message.
4. The UE shall transmit RRCConnectionReconfigurationComplete message.
5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table's 8.6.1.5-1 and 8.6.1.5-2.
6. UE shall transmit a MeasurementReport message triggered by Event B1. If the overall delays measured from the beginning of time period T2 is less than 4802 ms then the number of successful tests is increased by one. If the

UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. The SS shall set Cell 2 primary scrambling code = ((current cell 2 primary scrambling code - 50) mod 200 + 100) for the next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.6.1.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.6.1.4.3-1: Common Exception messages for E-UTRAN TDD - UTRAN FDD event triggered reporting under fading propagation conditions

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-4 Table H.3.1-7

Table 8.6.1.4.3-3: *ReportConfigInterRAT-B1-UTRA*: Additional E-UTRAN TDD - UTRAN FDD event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B1-UTRA(UTRA-Thres) ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventB1 SEQUENCE {			
b1-Threshold CHOICE {			
b1-ThresholdUTRA CHOICE {			
utra-EcN0	13 (-18dB)	-18 dB is actual EcNO value in dB ((13 - 49)/2 dB)	
}			
}			
}			
}			
hysteresis	0 (0dB)		
}			
}			

Table 8.6.1.4.3-4: *MeasResults*: Additional E-UTRAN TDD - UTRAN FDD event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1		
measResultServiCCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListUTRA	MeasResultListUTRA		
}			
}			

Table 8.6.1.4.3-5: *MeasResultListUTRA*: Additional E-UTRAN TDD - UTRAN FDD event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId CHOICE {			
fdd	UTRA-FDD-CellIdentity		
}			
measResult SEQUENCE {			
utra-EcN0		Set according to specific test	
}			
}			

8.6.1.5 Test requirement

Tables 8.6.1.4.1-1, 8.6.1.5-1 and 8.6.1.5-2 define the primary level settings including test tolerances for E-UTRAN TDD - UTRAN FDD event triggered reporting under fading propagation conditions in synchronous cells test.

Table 8.6.1.5-1: 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	
OCNG Pattern defined in D.2.1 (OP.1 TDD)		OP.1 TDD	
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	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 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 8.6.1.5-2: 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/Ior	dB	-10	
PCCPCH_Ec/Ior	dB	-12	
SCH_Ec/Ior	dB	-12	
PICH_Ec/Ior	dB	-15	
DPCH_Ec/Ior	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}. Note 3: Case 5 propagation conditions are defined in Annex A of 3GPP TS 25.101.			

The overall delays measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event B1 triggered measurement report to Cell 2.

The overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify,\ UTRA\_FDD}$

$$T_{identify,\ UTRA\_FDD} = T_{basic\_identify\_UTRA\_FDD} \cdot \frac{480}{T_{inter1}} \cdot N_{Freq} \quad ms$$

$T_{basic\_identify\_UTRA\_FDD}$ = 300 ms

T_{Inter1} = 30 ms

N_{Freq} = 1

TTI insertion uncertainty = 2 ms

The overall delays measured shall be less than a total of 4802 ms in this test case (note: this gives a total of 4800 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.7 E-UTRAN TDD - UTRAN measurements

8.7.1 E-UTRAN TDD - UTRAN TDD event triggered reporting under fading propagation conditions

- *Editor's note:*
- *It only includes 1.28 Mcps TDD option related requirements*

8.7.1.1 Test purpose

To verify the UE's ability to make a correct reporting of an event under fading propagation conditions within the E-UTRA TDD - UTRA TDD cell search requirements.

8.7.1.2 Test applicability

This test applies to all types of E-UTRA TDD UE release 8 and forward that support UTRA TDD. Applicability requires support for FGI bits 15 and 22.

8.7.1.3 Minimum conformance requirements

The measurement reporting delay shall be less than $T_{identify,\ UTRA\_TDD}$ in RRC_CONNECTED state.

When explicit neighbour list is provided and no DRX is used the UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{identify,\ UTRA\_TDD} = Max\left\{5000, T_{basic\ identify\ UTRA\_TDD} \cdot \frac{480}{T_{inter1}} \cdot N_{Freq}\right\} ms$$

If the UE does not require transmit gap to perform inter-RAT UTRA TDD measurements, the UE shall be able to identify a new detectable inter-RAT UTRA TDD cell belonging to the monitored set within 5000 ms.

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.

When measurement gaps are scheduled for UTRA TDD inter RAT measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in TS 36.133 [4] clause 9.3 with measurement period given by

$$T_{measurement\ \ UTRA\_TDD} = Max\left\{T_{Measurement\_Period\ \ UTRA\_TDD}, T_{basic\ measurement\ UTRA\_TDD} \cdot \frac{480}{T_{inter1}} \cdot N_{Freq}\right\} ms$$

If the UE does not need measurement gaps to perform UTRA TDD measurements, the measurement period for UTRA TDD measurements is 480 ms.

The UE shall be capable of performing UTRA TDD P-CCPCH RSCP measurements for $X_{basic\ measurementUTRA\_TDD}$ inter-frequency 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 $T_{Measurement\_UTRA\_TDD}$.

$X_{basic\ measurementUTRA\_TDD} = 6$

$T_{Measurement\_Period\ UTRA\_TDD}$ = 480 ms is the period used for calculating the measurement period $T_{measurement\_UTRA\_TDD}$ for UTRA TDD P-CCPCH RSCP measurements.

$T_{basic\_identify\_UTRA\_TDD}$ = 800 ms is the time period used in the inter RAT equation 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_{freq} and T_{inter1} are defined in TS 36.133 [4] section 8.1.2.1.1

Reported measurements in periodically triggered measurement reports shall meet the requirements in TS 36.133 [4] section 9.

Reported measurements in event triggered measurement reports shall meet the requirements in TS 36.133 [4] section 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 TS 36.133 [4] Section 8.1.2.4.3.1.1 When L3 filtering is used an additional delay can be expected.

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in TS 36.133 [4] section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in TS 36.133 [4] section 8.1.2.4.3.1.4 Event Triggered Reporting.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.4.3 and A.8.7.1.

8.7.1.4 Test description

8.7.1.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.23.
2. The general test parameter settings are set up according to Table 8.7.1.4.1-1.
3. Propagation conditions are set according to Annex B clauses B.0.
4. Message contents are defined in clause 8.7.1.4.3.
5. There is one E-UTRA TDD serving cell and one UTRA TDD cell specified in the test. Cell 1 (E-UTRA TDD cell) is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.7.1.4.1-1: 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 section A.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.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 3GPP TS 36.133 section 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	dB	0	
Filter coefficient		0	L3 filtering is not used
DRX		OFF	
Time offset between cells	ms	3	Asynchronous cells 3ms or 92160*Ts
Ofn	dB	0	
Thresh	dBm	-87	
T1	s	5	
T2	s	10	

8.7.1.4.2 Test procedure

The test consists of one active cell and one neighbour cell. 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 durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table's 8.7.1.5-1 and 8.7.1.5-2. Propagation conditions are set according to Annex B clause B.1.1 and B.2.2. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table's 8.7.1.5-1 and 8.7.1.5-2.

6. UE shall transmit a MeasurementReport message triggered by Event B1. If the overall delay measured from the beginning of time period T2 is less than 6402 ms then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. SS shall change to set cell 2 cell parameter id =(current cell 2 cell parameter id +4) mod 16.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.7.1.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.7.1.4.3-1: Common Exception messages for E-UTRAN TDD - UTRAN TDD event triggered reporting under fading propagation conditions

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-4 Table H.3.1-7

Table 8.7.1.4.3-2: *ReportConfigInterRAT-B1-UTRA*: Additional E-UTRAN TDD - UTRAN TDD event triggered reporting under fading propagation conditions

Derivation Path: 36.508 clause 4.6.6 Table 4.6.6-7B			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B1-UTRA(UTRA-Thres) ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventB1 SEQUENCE {			
b1-Threshold CHOICE {			
b1-ThresholdUTRA CHOICE {			
utra-RSCP	28	UTRA-Thres is actual RSCP value in dBm UTRA-Thres + 115	UTRA-TDD
}			
}			
}			
}			
hysteresis	0 (0dB)	The actual value is IE value * 0.5 dB.	
timeToTrigger	ms0		
}			
}			
}			

Table 8.7.1.4.3-3: *MeasResults*: Additional E-UTRAN TDD - UTRAN TDD event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListUTRA	MeasResultListUTRA		
}			
}			

Table 8.7.1.4.3-4: *MeasResultListUTRA*: Additional E-UTRAN TDD - UTRAN TDD event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId CHOICE {			
tdd	PhysCellIdUTRA-TDD	INTEGER (0..127)	
}			
measResult SEQUENCE {			
utra-RSCP		Set according to specific test INTEGER (-5..91)	
}			
}			

8.7.1.5 Test requirement

Tables 8.7.1.4.1-1, 8.7.1.5-1 and 8.7.1.5-2 define the primary level settings including test tolerances for E-UTRAN TDD - UTRAN TDD event triggered reporting under fading propagation conditions in synchronous cells test.

Table 8.7.1.5-1: Cell specific test parameters for cell search E-UTRA TDD to UTRA TDD test case (cell 1)

Parameter	Unit	Cell 1	
		T1	T2
E-UTRA RF Channel Number		1	
$BW_{channel}$	MHz	10	
OCNG Pattern defined in D.2.1 (OP.1 TDD)		OP.1 TDD	
PBCH_RA	dB	0	0
PBCH_RB	dB		
PSS_RB	dB		
SSS_RB	dB		
PCFICH_PA	dB		
PHICH_PA	dB		
PHICH_PB	dB		
PDCCH_PA	dB		
PDCCH_PB	dB		
PDSCH_PA	dB		
PDSCH_PB	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	-98	
RSRP	dBm/15kHz	-89	-89
SCH_RP	dBm/15kHz	-89	-89
Propagation Condition		ETU70	
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: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.			

Table 8.7.1.5-2: 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		DwPTS	
		T1	T2	T1	T2
UTRA RF Channel Number NOTE1		Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3		
DwPCH_Ec/Ior	dB			0	0
OCNS_Ec/Ior 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_{or}. Note 3: Case 3 propagation conditions are defined in Annex B of 3GPP TS 25.102					

The overall delays measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event B1 triggered measurement report to Cell 2.

The overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify,\ UTRA\_TDD}$

$$T_{identify,\ UTRA\_TDD} = Max\left\{5000, T_{basic\,identify\,UTRA\_TDD} \cdot \frac{480}{T_{inter1}} \cdot N_{Freq}\right\} ms$$

$T_{basic\_identify\_UTRA\_TDD}$ = 800 ms

T_{Inter1} = 60 ms

N_{Freq} = 1

TTI insertion uncertainty = 2 ms

The overall delays measured shall be less than a total of 6402 ms in this test case (note: this gives a total of 6400 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.7.2 E-UTRAN TDD - UTRAN TDD cell search when DRX is used under fading propagation conditions

- *Editor's note:*
- *It only includes 1.28 Mcps TDD option related requirements*

8.7.2.1 Test purpose

The test cases are to verify that the UE makes correct reporting of an event in DRX. These tests will partly verify E-UTRA TDD to UTRA TDD cell search requirements when DRX is used in TS 36.133 [4] section 8.1.2.4.3.2.

8.7.2.2 Test applicability

This test applies to all types of release 8 and forward E-UTRA TDD UEs that support release 9 and forward UTRA TDD. Applicability requires support for FGI bits 5, 15 and 22.

8.7.2.3 Minimum conformance requirements

When explicit neighbour list is provided and DRX is used 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 8.7.2.3-1

Table 8.7.2.3-1: Requirement to identify a newly detectable UTRA TDD cell

DRX cycle length (s)	$T_{identify\_UTRA\_TDD}$ (s) (DRX cycles)	
	Gap period = 40 ms	Gap period = 80 ms
≤0.32	Non DRX Requirements in TS 36.133[4] section 8.1.2.4.3.1 are applicable	Non DRX Requirements in TS 36.133[4] section 8.1.2.4.3.1 are applicable
0.32<DRX-cycle≤0.512	Note (20* Nfreq)	Note (25* Nfreq)
0.512<DRX-cycle≤2.56	Note (20* Nfreq)	Note (20* Nfreq)
Note: Time depends upon the DRX cycle in use		

A cell shall be considered detectable provided following conditions are fulfilled: A cell shall be considered detectable when

- P-CCPCH Ec/Io ≥ -8 dB,
- DwPCH_Ec/Io ≥ -5 dB.

When L3 filtering is used an additional delay can be expected.

The UE shall be capable of performing UTRA TDD P-CCPCH RSCP measurements of at least 6 UTRA cells per UTRA TDD carrier and the UE physical layer shall be capable of reporting measurements to higher layers with the measurement period defined in table 8.7.2.3-2.

Table 8.7.2.3-2: Requirement to measure UTRA TDD cells

DRX cycle length (s)	$T_{measure\_UTRA\_TDD}$ (s) (DRX cycles)	
	Gap period = 40 ms	Gap period = 80 ms
≤0.04	Non DRX Requirements in TS 36.133[4] section 8.1.2.4.3.1 are applicable	Non DRX Requirements in TS 36.133[4] section 8.1.2.4.3.1 are applicable
0.064	0.48*N_{freq} (7.5*N_{freq})	0.8*N_{freq} (12.5*N_{freq})
0.08	0.48*N_{freq} (6*N_{freq})	0. 8*N_{freq} (10*N_{freq})
0.128	0.64*N_{freq} (5*N_{freq})	0. 8*N_{freq} (6.25*N_{freq})
0. 128<DRX-cycle≤2.56	Note (5*N_{freq})	Note (5*N_{freq})
Note: Time depends upon the DRX cycle in use		

The measurement accuracy for all measured cells shall be as specified in the TS 36.133[4] sub-clause 9.1.

Reported measurements in periodically triggered measurement reports shall meet the requirements in TS 36.133 [4] section 9.

Reported measurements in event triggered measurement reports shall meet the requirements in TS 36.133 [4] section 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 TS 36.133 [4] Section 8.1.2.4.3.2 When L3 filtering is used an additional delay can be expected.

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements TS 36.133 [4] in section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in TS 36.133 [4] section 8.1.2.4.3.2.2 Event Triggered Reporting.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.4.3.2 and A.8.7.2.

8.7.2.4 Test description

8.7.2.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.23.
2. The general test parameter settings are set up according to Table 8.7.2.4.1-1.
3. Propagation conditions are set according to Annex B clauses B.0.
4. Message contents are defined in clause 8.7.2.4.3.
5. There is one E-UTRA TDD serving cell and one UTRA TDD cell specified in the test. Cell 1 (E-UTRA TDD cell) is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test. Cell 2 (UTRAN TDD cell) is to be searched. Gap pattern configuration # 0 as defined in TS 36.133 [4] table 8.1.2.1-1 is provided.

Table 8.7.2.4.1-1: 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
		Value		
PDSCH parameters		DL Reference Measurement Channel R.0 TDD		As specified in section A.1.2. Note that UE may only be allocated at *On Duration*
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD		As specified in section A.2.2.
Active cell		Cell 1		E-UTRAN TDD cell
Neighbour cell		Cell 2		UTRAN 1.28Mcps TDD cell
Gap Pattern Id		0		As specified in 3GPP TS 36.133 section 8.1.2.1.
Uplink-downlink configuration		1		As specified in 3GPP TS 36.211 section 4.2 Table 4.2-2
Special subframe configuration		6		As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
PRACH configuration		4		As specified in table 5.7.1-3 in 3GPP 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 procedure.
DRX		ON		DRX related parameters are defined in Table 8.7.2.5-3
Time offset between cells	ms	3		Asynchronous cells 3ms or 92160*Ts
T1	s	5		
T2	s	8	30	

8.7.2.4.2 Test procedure

The test consists of one active cell and one neighbour cell. 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 durations 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 wit hPUSCH resource at every DRX cycle. In Test 2 the uplink time alignment is not maintained and UnE needs to use RACH to obtain UL allocation for measurement reporting.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
2. Set the parameters according to T1 in Table's 8.7.2.5-1 and 8.7.2.5-2. Propagation conditions are set according to Annex B clause B.1.1 and B.2.2. T1 starts.
3. The SS shall transmit an RRCConnectionReconfiguration message.
4. The UE shall transmit RRCConnectionReconfigurationComplete message.
5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table's 8.7.2.5-1 and 8.7.2.5-2. T2 starts.
6. UE shall transmit a MeasurementReport message triggered by Event B1. If the overall delay measured from the beginning of time period T2 is less than 6442 ms for Test1 or less than 26882 ms for Test2 then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. SS shall set Cell 2 cell parameter id = (current Cell 2 cell parameter id+4) mod 16 for next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

11. Repeat step 1-10 for each sub-test in Table 8.7.2.4.1-1 as appropriate.

8.7.2.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.7.2.4.3-1: Common Exception messages for E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-4 Table H.3.1-7 Table H.3.7-1 Table H.3.7-2 Table H.3.7-3

Table 8.7.2.4.3-2: *RRCConnectionReconfiguration*: Additional E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation

Derivation Path: TS 36.508 [7] clause 4.6.1, Table 4.6.1-8 RRCConnectionReconfiguration			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier-DL		
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
measConfig	MeasConfig -DEFAULT		
radioResourceConfigDedicated	RadioResourceConfigDedicated-HO		
}			
}			
}			
}			

Table 8.7.2.4.3-3: *ReportConfigInterRAT-B1-UTRA*: Additional E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation

Derivation Path: 36.508 clause 4.6.6 Table 4.6.6-7B			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B1-UTRA(UTRA-Thres) ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventB1 SEQUENCE {			
b1-Threshold CHOICE {			
b1-ThresholdUTRA CHOICE {			
thresholdUTRA-RSCP	32	UTRA-Thres + 115 UTRA-Thres is actual RSCP value in dBm	UTRA-TDD
}			
}			
}			
}			
hysteresis	0	The actual value is IE value * 0.5 dB INTEGER (0..30)	
timeToTrigger	ms0		
}			
}			
}			

Table 8.7.2.4.3-4: *SchedulingRequest-Config-DEFAULT*: Additional E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation

Derivation Path: TS 36.508 [7] clause 4.6.3, Table 4.6.3-20: SchedulingRequest-Config-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequest-Config-DEFAULT ::= CHOICE {			
setup SEQUENCE {			
sr-PUCCH-ResourceIndex	41	Channel-bandwidth-dependent parameter	
sr-ConfigIndex	2		
dsr-TransMax	n4		
}			
}			

Table 8.7.2.4.3-5: *MeasResults*: Additional E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListUTRA	MeasResultListUTRA		
}			
}			

Table 8.7.2.4.3-6: *MeasResultListUTRA*: Additional E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId CHOICE {			
tdd	12	PhysCellIdUTRA-TDD INTEGER (0..127)	
}			
measResult SEQUENCE {			
utra-RSCP		Set according to specific test INTEGER (-5..91)	
}			
}			

Table 8.7.2.4.3-7: *PRACH-Config-DEFAULT*: Additional E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation

Derivation Path: TS 36.508 [7] clause 7.3.2 Table 7.3.2-1			
Information Element	**Value/remark**	**Comment**	**Condition**
PRACH-Config-DEFAULT ::= SEQUENCE {			
prach-ConfigIndex	4		
}			

8.7.2.5 Test requirement

The common test parameters are given in Tables 8.7.2.4.1-1, 8.7.2.5-1 and 8.7.2.5-2. DRX configuration for Test1 and Test2 are given in Table 8.7.2.5-3 and time alignment timer and scheduling request related parameters in Table 8.7.2.5-4.

Table 8.7.2.5-1: 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	Cell 1	
		T1	**T2**
E-UTRA RF Channel Number		1	
$BW_{channel}$	MHz	10	
OCNG Patterns defined in D.2.1 (OP.1 TDD)		OP.1 TDD	
PBCH_RA	dB	0	0
PBCH_RB	dB		
PSS_RB	dB		
SSS_RB	dB		
PCFICH_PA	dB		
PHICH_PA	dB		
PHICH_PB	dB		
PDCCH_PA	dB		
PDCCH_PB	dB		
PDSCH_PA	dB		
PDSCH_PB	dB		
OCNG_RA^Note1	dB		
OCNG_RB^Note1	dB		

$\hat{E}_s/I_{ot}$	dB	4	4
$\hat{E}_s/N_{oc}$	dB	4	4
N_{oc} Note 2	dBm/15kHz	-98	
RSRP Note 3	dBm/15kHz	-94	-94
SCH_RP Note 3	dBm/15kHz	-94	-94
Propagation Condition		ETU70	
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_{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 8.7.2.5-2: Cell specific test parameters for E-UTRAN TDD to UTRAN 1.28Mcps TDD cell search when DRX is used in fading propagation conditions (cell 2)

Parameter	Unit	Cell 2 (UTRA)			
Timeslot Number		0		DwPTS	
		T1	T2	T1	T2
UTRA RF Channel Number NOTE1		Channel 2			
PCCPCH_Ec/Ior	dB	-3	-3		
DwPCH_Ec/Ior	dB			0	0
OCNS_Ec/Ior NOTE2	dB	-3	-3		
$\hat{I}_{or}/I_{oc}$	dB	-inf	9	-inf	9
I_{oc}	dBm/1.28 MHz	-80.40			
PCCPCH RSCP	dBm	-inf	-74.40 +TT	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 Ior. Note 3: Case 3 propagation conditions are defined in Annex B of 3GPP TS 25.102					

Table 8.7.2.5-3: 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 Value	Test2 Value	Comment
onDurationTimer	psf1	psf1	
drx-InactivityTimer	psf1	psf1	
drx-RetransmissionTimer	psf1	psf1	
longDRX-CycleStartOffset	sf40	sf1280	
shortDRX	disable	disable	

Table 8.7.2.5-4: *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
	Value	Value	
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331.
sr-ConfigIndex	2	2	For further information see section 6.3.2 in 3GPP TS 36.331 and 10.1 in 3GPP TS 36.213.

In Test 1 when DRX cycle length = 40 ms is used, the overall delay measured is defined as the time from the beginning of time period T2, to the moment when the UE send one Event B1 triggered the measurement report on PUSCH.

In Test 2 when DRX cycle length = 1280 ms is used, the overall delay measured 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.

For both tests:

The overall delay measured may be up to 2xTTI_{DCCH} higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

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

The overall delay measured when DRX cycle length is 40 ms test requirement is expressed as:

Overall delay measured = measurement reporting delay + TTI insertion uncertainty + DRX cycle length

Measurement reporting delay = $T_{identify, UTRA\_TDD}$=

$$T_{identify,\ UTRA\_TDD} = Max\left\{5000, T_{basic\,identify\,UTRA\_TDD} \cdot \frac{480}{T_{inter1}} \cdot N_{Freq}\right\} ms$$

Where:

$T_{basic\_identify\_UTRA\_TDD}$ = 800 ms. It is the time period used in the inter RAT equation where the maximum allowed time for the UE to identify a new UTRA TDD cell is defined.

T_{Inter1} = 60 ms.

N_{freq} = 1. It is defined in TS 36.133 [4] clause 8.1.2.1.1.

TTI insertion uncertainty = 2 ms

DRX cycle length = 40 ms

The overall delay measured when DRX cycle length is 40 ms shall be less than a total of 6442 ms.

The overall delay measured when DRX cycle length is 1280 ms test requirement is expressed as:

Overall delay measured = measurement reporting delay + TTI insertion uncertainty + DRX cycle length

Measurement reporting delay = $T_{identify\_UTRA\_TDD}$

$T_{identify\_UTRA\_TDD}$ = 25600 ms. When DRX cycle length is 1280 ms the $T_{identify\_UTRA\_TDD}$ is 20 x 1280 ms.

TTI insertion uncertainty = 2 ms

DRX cycle length = 1280 ms

The overall delay measured when DRX cycle length is 1280 ms shall be less than a total of 26882 ms.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.7.3 E-UTRAN TDD - UTRAN TDD SON ANR cell search reporting under AWGN propagation conditions

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined
- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.7.3.1 Test purpose

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 TS 36.133[4] section 8.1.2.4.13.1.

8.7.3.2 Test applicability

This test applies to all types of release 8 and forward E-UTRA TDD UEs that support release 9 and forward UTRA TDD. Applicability requires support for FGI bit 22.

8.7.3.3 Minimum conformance requirements

When no DRX is used the UE shall be able to identify a new cell within:

$$\mathrm{T}_{\text{identify, UTRA\_TDD}} = \mathrm{T}_{\text{basic\_identify\_UTRA\_TDD}} \cdot \frac{480}{\mathrm{T}_{\text{inter1}}} \cdot N_{Freq} \quad ms$$

$\mathrm{T}_{\text{basic\_identify\_UTRA\_TDD}}$ = 800 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*$\mathrm{T}_{\text{identify, UTRA\_TDD}}$ ms, the UE may stop searching UTRA TDD cells for SON.

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 $\mathrm{T}_{\text{identify, UTRA\_TDD}}$ defined in section 8.1.2.4.13.1.1 in TS36.133 [4] and in section 8.1.2.4.13.1.2 in TS36.133 [4] for non DRX and DRX cases respectively. When L3 filtering is used an additional delay can be expected.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.4.13 and A.8.7.3.

8.7.3.4 Test description

8.7.3.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.22.

2. The general test parameter settings are set up according to Table 8.7.3.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.7.3.4.3.

5. There is one E-UTRA TDD serving cell and one UTRA TDD cell specified in the test. Cell 1 (E-UTRA TDD cell) is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.7.3.4.1-1: 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 section A.1.2
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in section A.2.2
Gap Pattern Id		1	As specified in 3GPP TS 36.133 [4] 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.
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 [9]
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211 [9]
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 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	

8.7.3.4.2 Test procedure

The test consists of one active E-UTRAN cell and one neighbour UTRAN cell. 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 durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Tables 8.7.3.5-1 and 8.7.3.5-2. Propagation conditions are set according to Annex B clauses B.1.1. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Tables 8.7.3.5-1 and 8.7.3.5-2.

6. The UE shall transmit a MeasurementReport message containing the cell parameter id of cell 2. If the overall delays measured from the beginning of time period T2 is less than 12802 ms then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

7. After the SS receive the MeasurementReport message in step 7) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. The SS shall set Cell 2 cell parameter id = (current Cell 2 cell parameter id+4) mod 16 for the next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.7.3.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.7.3.4.3-1: Common Exception messages for E-UTRAN TDD-UTRAN TDD cell search reporting for SON ANR in AWGN propagation conditions

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-7

Table 8.7.3.4.3-2: *MeasConfig-DEFAULT*: Additional E-UTRAN TDD-UTRAN TDD cell search reporting for SON ANR in AWGN propagation conditions

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1 MeasConfig-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
measObjectToRemoveList	Not present		
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entry		
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f1		
measObject CHOICE {			
MeasObjectEUTRA	MeasObjectEUTRA-GENERIC(f1)	f1 is the frequency of the serving cell (E-UTRA Cell)	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f2		
measObject CHOICE {			
MeasObjectUTRA	MeasObjectUTRA-GENERIC(f2)	f2 is the frequency of the neighbouring cell (UTRA Cell)	
}			
}			
}			
reportConfigToRemoveList	Not present		
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId))OF SEQUENCE {	1 entry		
ReportConfigToAddMod SEQUENCE {			
reportConfigId	idReportConfig		
reportConfig CHOICE {			
reportConfigInterRAT	ReportConfigInterRAT-SON-UTRA		
}			
}			
}			
measIdToRemoveList	Not present		
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) of SEQUENCE {	1 entry		
measId	1		
measObjectId	IdMeasObject-f2		
reportConfigId	idReportConfig		
}			
quantityConfig	QuantityConfig-DEFAULT		UTRAN
measGapConfig	MeasGapConfig-GP2		
s-Measure	Not present		
preRegistrationInfoHRPD	Not present		
speedStatePars	Not present		
}			

Table 8.7.3.4.3-3: *ReportConfigInterRAT-SON-UTRA*: Additional E-UTRAN TDD-UTRAN TDD cell search reporting for SON ANR in AWGN propagation conditions

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-SON-UTRA::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose ENUMERATED {	reportStrongestCellsForSON		
}			
}			
}			
maxReportCells	1		
reportInterval	ms1024		
reportAmount	r1		
}			

Table 8.7.3.4.3-4: *MeasResults*: Additional E-UTRAN TDD-UTRAN TDD cell search reporting for SON ANR in AWGN propagation conditions

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListUTRA	MeasResultListUTRA		
}			
}			

Table 8.7.3.4.3-5: *MeasResultListUTRA*: Additional E-UTRAN TDD-UTRAN TDD cell search reporting for SON ANR in AWGN propagation conditions

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultUTRA			
MeasResultUTRA ::= SEQUENCE {			
physCellId CHOICE {			
tdd	PhysCellIdUTRA-TDD	The cell parameter id, as defined in TS 25.331	
}			
measResult SEQUENCE {			
utra-RSCP		Set according to specific test	
}			
}			

8.7.3.5 Test requirement

Tables 8.7.3.4.1-1, 8.7.3.5-1 and 8.7.3.5-2 define the primary level settings including test tolerances for UTRAN TDD cell search for SON ANR under AWGN propagation conditions test.

Table 8.7.3.5-1: 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	10	
OCNG Patterns defined in D.2.1 (OP.1 TDD)		OP.1 TDD	
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	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		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.
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 8.7.3.5-2: 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		Channel 2			
DL timeslot number		0	DwPTS	0	DwPTS
PCCPCH_Ec/Ior	dB	-3		-3	
DwPCH_Ec/Ior	dB		0		0
OCNS_Ec/Ior	dB	-3		-3	
Ior/Ioc	dB	-Infinity		5	
PCCPCH RSCP Note1	dBm	-Infinity	n.a.	-73	n.a.
Io Note1	dBm/1.28MHz	-Infinity		-70.88	
Ioc	dBm/1.28MHz	-75			
Propagation condition		AWGN			

Note 1: PCCPCH RSCP and Io 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.

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.

When no DRX is used the UE shall be able to identify a new cell within:

$$T_{\text{identify, UTRA\_TDD}} = T_{\text{basic\_identify\_UTRA\_TDD}} \cdot \frac{480}{T_{\text{inter1}}} \cdot N_{Freq} \quad ms$$

$T_{\text{basic\_identify\_UTRA\_TDD}}$ = 800 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.

T_{Inter1} = 30 ms. TTI insertion uncertainty = 2 ms

The overall delays measured shall be less than a total of 12802 ms in this test case (note: this gives a total of 12800 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

The rate of correct measurement reports observed with this delay during repeated tests shall be at least 90% with a confidence level of 95%.

8.7.4 E-UTRAN TDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

8.7.4.1 Test purpose

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 TS 36.133 [4] section 8.1.2.4.3.1.1a under AWGN propagation conditions.

8.7.4.2 Test applicability

This test applies to all types of E-UTRA TDD UE release 9 and forward that support UTRA TDD. Applicability requires support for FGI bits 15.

8.7.4.3 Minimum conformance requirements

When explicit neighbour list is provided and no DRX is used or when DRX cycle length ≤ 40 ms the UE shall be able to identify a new detectable cell belonging to the monitored set within $T_{\text{identify, enhanced\_UTRA\_TDD}}$:

$$T_{\text{identify, enhanced\_UTRA\_TDD}} = (T_{\text{basic\_identify\_enhanced\_UTRA\_TDD}} \cdot \frac{480}{T_{\text{inter1}}} + 480) \cdot N_{Freq} \quad ms$$

If the UE does not require transmit gap to perform inter-RAT UTRA TDD measurements, the UE shall be able to identify a new detectable inter-RAT UTRA TDD cell belonging to the monitored set within 500 ms.

A cell shall be considered detectable when:

- P-CCPCH_Ec/Io ≥ -6 dB,
- DwPCH_Ec/Io ≥ -1 dB

When L3 filtering is used an additional delay can be expected.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.4.3.1.1a and A.8.7.4.

8.7.4.4 Test description

8.7.4.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.22.

2. The general test parameter settings are set up according to Table 8.7.4.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.7.4.4.3.

5. There is one E-UTRA TDD serving cell and one UTRA TDD cell specified in the test. Cell 1 (E-UTRA TDD cell) is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test. Cell 2 (UTRAN TDD cell) is to be searched. Gap pattern configuration # 0 as defined in TS 36.133 [4] table 8.1.2.1-1 is provided.

Table 8.7.4.4.1-1: 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.1.2.
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in section A.2.2.
Gap Pattern Id		0	As specified in 3GPP TS 36.133 [4] 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 [9]
Special subframe configuration of cell 1		6	As specified in table 4.2.1 in TS 36.211 [9]
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	
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	

8.7.4.4.2 Test procedure

The test consists of one active cell and one neighbour cell. 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 durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Tables 8.7.4.5-1 and 8.7.4.5-2. Propagation conditions are set according to Annex B clause B.1.1. T1 starts.

3. The SS shall transmit an *RRCConnectionReconfiguration* with event B1 configured message.

4. The UE shall transmit *RRCConnectionReconfigurationComplete* message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Tables 8.7.4.5-1 and 8.7.4.5-2. T2 starts.
6. UE shall transmit a *MeasurementReport* message triggered by Event B1. If the overall delay measured from the beginning of time period T2 is less than 1122 ms then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.
7. After the SS receives the *MeasurementReport* message in step 6) or when T2 expires, the SS shall transmit *RRCConnectionRelease* message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.
8. SS shall set Cell 2 cell parameter id = (current Cell 2 cell parameter id+4) mod 16 for next iteration of the test procedure loop.
9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.7.4.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.7.4.4.3-1: Common Exception messages for E-UTRAN TDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-4 Table H.3.1-7

Table 8.7.4.4.3-2: *ReportConfigInterRAT-B1-UTRA*: Additional E-UTRAN TDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

Derivation Path: TS 36.508[7] clause 4.6.6 Table 4.6.6-7B			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B1-UTRA(UTRA-Thres) ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventB1 SEQUENCE {			
b1-Threshold CHOICE {			
b1-ThresholdUTRA CHOICE {			
utra-RSCP	32	UTRA-Thres is actual RSCP value in dBm UTRA-Thres + 115	UTRA-TDD
}			
}			
}			
}			
hysteresis	0 (0dB)	The actual value is IE value * 0.5 dB.	
timeToTrigger	ms0		
}			
}			
}			

Table 8.7.4.4.3-3: *MeasResults*: Additional E-UTRAN TDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

Derivation Path: TS 36.331[5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListUTRA	MeasResultListUTRA		
}			
}			

Table 8.7.4.4.3-4: *MeasResultListUTRA*: E-UTRAN TDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

Derivation Path: TS 36.331[5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId CHOICE {			
tdd	PhysCellIdUTRA-TDD	INTEGER (0..127)	
}			
measResult SEQUENCE {			
utra-RSCP		Set according to specific test INTEGER (-5..91)	
}			
}			

8.7.4.5 Test requirement

Tables 8.7.4.4.1-1, 8.7.4.5-1 and 8.7.4.5-2 define the primary level settings including test tolerances for E-UTRAN TDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions test.

Table 8.7.4.5-1: 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 D.2.1 (OP.1 TDD)		OP.1 TDD	
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	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		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.
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 8.7.4.5-2: 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		DwPTS	
		T1	T2	T1	T2
UTRA RF Channel Number[Note1]		1			
P-CCPCH_Ec/Ior	dB	-4.77	-4.77		
DwPCH_Ec/Ior	dB			0	0
OCNS_Ec/Ior[Note2]	dB	-1.76	-1.76		
$\hat{I}_{or}/I_{oc}$	dB	- infinity	8	- infinity	8
I_{oc}	dBm/1.28 MHz	-79.4			
P-CCPCH RSCP[Note3]	dBm	- infinity	-76.17	n.a.	n.a.
P-CCPCH_Ec/Io[Note3]	dB	- infinity	-5.41	n.a.	n.a.
DwPCH_Ec/Io[Note3]	dB	n.a.	n.a.	- infinity	-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/Io and DwPCH_Ec/Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.					

The overall delays measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event B1 triggered measurement report to Cell 2.

The overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify, enhanced\_UTRA\_TDD}$

$$T_{identify,\ enhanced\_UTRA\_TDD} = (T_{basic\_identify\_enhanced\_UTRA\_TDD} \cdot \frac{480}{T_{inter1}} + 480) \cdot N_{Freq} \quad ms$$

$T_{basic\_identify\_enhanced\_UTRA\_TDD}$ = 80 ms. It is the time period used in the inter RAT equation where the maximum allowed time for the UE to identify a new UTRA TDD cell is defined.

T_{Inter1} = 60 ms

N_{Freq} = 1. It is defined in TS 36.133 [4] clause 8.1.2.1.1.

TTI insertion uncertainty = 2 ms

The overall delays measured shall be less than a total of 1122 ms in this test case (note: this gives a total of 1120 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.8 E-UTRAN FDD - GSM measurements

8.8.1 E-UTRAN FDD - GSM event triggered reporting in AWGN

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined

- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.8.1.1 Test purpose

To verify the UE's ability to make a correct reporting of an event when doing inter-RAT (GSM) measurements under AWGN condition within the E-UTRA FDD - GSM cell search requirements.

8.8.1.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 8 and forward that support GSM. Applicability requires support for FGI bits 15 and 23.

8.8.1.3 Minimum conformance requirements

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 in TS 36.133 [4] is configured by E-UTRAN 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.

This measurement shall be based on measurement gaps allocated for GSM carrier RSSI measurement as described in section 8.1.2.1 in TS 36.133 [4] 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 N_{freq} * 480 ms. The parameter N_{freq} is defined in clause 8.1.2.1.1 [4] as $N_{freq} = N_{freq,\ E\text{-}UTRA} + N_{freq,\ UTRA} + M_{gsm}$

Where:

$N_{freq,\ E\text{-}UTRA}$ is the number of E-UTRA carriers being monitored

$N_{freq,\ UTRA}$ is the number of UTRA carriers being monitored

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 Measurement Gap Repetition Period (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

The UE shall meet the measurement accuracy requirements stated for RXLEV in TS 45.008 [15], 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.

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 section 8.1.2.4.5.1.2.1 of TS 36.133 [4].

- **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 section 8.1.2.4.5.1.2.2 of TS 36.133 [4].

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 section 8.1.2.4.5.1 in TS 36.133 [4] when a measurement gap pattern sequence is activated.
- The UE shall perform measurement reporting as defined in TS 36.331 [5].
- 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 [5].

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.

$T_{re-confirm,GSM}$ 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 of TS 36.133 [4].

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005 [16].

This measurement shall be based on the measurement gaps used for Initial BSIC identification as described in section 8.1.2.4.5.1.2 of TS 36.133 [4].

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 of TS 36.133 [4]. The requirements in the table represent the time required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier.

Reported measurements in event triggered measurement reports shall meet the requirements in section TS 36.331 [5].

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 $T_{\text{Measurement Period,GSM}}$ (see section 8.1.2.4.5.1 of TS 36.133 [4]).

The event triggered measurement reporting delay for a GSM cell with verified BSIC , measured without L3 filtering shall be less than $2*T_{\text{Measurement Period,GSM}}$, where $T_{\text{Measurement Period, GSM}}$ is defined in section 8.1.2.4.5.1. of TS 36.133 [4] When L3 filtering is used an additional delay can be expected.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.4.5 and A.8.8.1

8.8.1.4 Test description

8.8.1.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A Figure A.14.

2. The general test parameter settings are set up according to Table 8.8.1.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.8.1.4.3.

5. There is one E-UTRA FDD carrier and one GSM cell specified in the test. Cell 1 (E-UTRA FDD cell) is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.8.1.4.1-1: 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 section A.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in section A.2.1.
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 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	

8.8.1.4.2 Test procedure

The test consists of one active cell and one neighbour cell. 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 durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
2. Set the parameters according to T1 in Table 8.8.1.5-1. Propagation conditions are set according to Annex B clause B.1.1. T1 starts.
3. SS shall transmit an RRCConnectionReconfiguration message.
4. The UE shall transmit RRCConnectionReconfigurationComplete message.
5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table's 8.8.1.5-1 and 8.8.1.5-2.
6. UE shall transmit a MeasurementReport message triggered by Event B1. If the measurement reporting delay measured from the beginning of time period T2 is less than 3122 ms then the number of successful tests is increased by one. If the UE fails to report the event within the measurement reporting delay requirement then the number of failure tests is increased by one.
7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.
8. The SS shall set a different BSIC on Cell 2, as the previous timing information of Cell 2 is invalid in the UE for the next iteration of the test procedure loop.
9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.8.1.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.8.1.4.3-1: Common Exception messages for E-UTRAN FDD - GSM Event triggered reporting in AWGN

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-7 Table H.3.1-10

Table 8.8.1.4.3-2: *SystemInformationBlockType7*: Additional E-UTRAN FDD - GSM Event triggered reporting in AWGN

Derivation Path: TS 36.508 [7] clause 4.4.3.3, Table 4.4.3.3-3 SystemInformationBlockType7			
Information Element	**Value/remark**	**Comment**	**Condition**
commonInfo SEQUENCE {			
p-MaxGERAN	33 (33 dBm)		GSM 400 & GSM 900 & GSM 850 & GSM 700
	30 (30 dBm)		DCS 1800 & PCS 1900
}			

Table 8.8.1.4.3-3: *ReportConfigInterRAT-B1-GERAN*: Additional E-UTRAN FDD - GSM Event triggered reporting in AWGN

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-7A ReportConfigInterRAT-B1-GERAN(GERAN-Thres)			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B1-GERAN(GERAN-Thres) ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventIdeventide CHOICE {			
eventB1 SEQUENCE {			
b1-Threshold CHOICE {			
B1-ThresholdGERAN CHOICE {			
thresholdGERAN	30 (-80 dBm)	-80 is actual value in dBm (30 - 110 dBm)	
}			
}			
}			
hysteresis	0 (0 dB)		
}			
}			
}			

Table 8.8.1.4.3-4: *MeasResults*: Additional E-UTRAN FDD - GSM Event triggered reporting in AWGN

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListGERAN	MeasResultListGERAN		
}			
}			

Table 8.6.1.4.3-5: *MeasResultListGERAN*: Additional E-UTRAN FDD - GSM Event triggered reporting in AWGN

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListGERAN ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
MeasResultGERAN SEQUENCE {			
carrierFreq	CarrierFreqGERAN	Contains the carrier frequency of the target GERAN cell	
physCellId	PhysCellIdGERAN	Contains the Base Station Identity Code (BSIC)	
}			
measResult SEQUENCE {			
rssi		Set according to specific test	
}			
}			

8.8.1.5 Test requirement

Tables 8.8.1.4.1-1, 8.8.1.5-1 and 8.8.1.5-2 define the primary level settings including test tolerances for E-UTRAN FDD-GSM event triggered reporting under AWGN conditions.

Table 8.8.1.5-1: Cell specific test parameters for E-UTRAN FDD (Cell # 1) for event triggered reporting of GSM cell in AWGN

Parameter	Unit	Cell 1	
		T1	T2
E-UTRA RF Channel Number		1	
$BW_{channel}$	MHz	10	
OCNG Pattern defined in D.1.1 (OP.1 FDD)		OP.1 FDD	
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	dB		
OCNG_RA^Note 1	dB		
OCNG_RB^Note 1	dB		
$\hat{E}_s/I_{ot}$	dB	4	4
$\hat{E}_s/N_{oc}$		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 8.8.1.5-2: 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

The overall delay measured is defined as the time from the beginning of time period T2, to the moment the UE sends one Event B1 triggered measurement report including BSIC of Cell 2.

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.

The overall delay measured shall be less than a total of 3122 ms in this test case. (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 plus the TTI insertion uncertainty of 2ms).

The event triggered measurement reporting delay = 2*$T_{Measurement Period, GSM}$ = 2* 480 ms = 960 ms.

Initial BSIC identification delay = 2160 ms.

TTI insertion uncertainty = 2 ms.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.8.2 E-UTRAN FDD - GSM event triggered reporting when DRX is used in AWGN

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined
- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.8.2.1 Test purpose

To verify the UE's ability to make a correct reporting of an event in DRX when doing inter-RAT (GSM) measurements under AWGN condition within the E-UTRA FDD - GSM cell search requirements.

8.8.2.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 8 and forward that support GSM. Applicability requires support for FGI bits 5, 15 and 23.

8.8.2.3 Minimum conformance requirements

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 in TS 36.133 [4] is configured by E-UTRAN 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.

This measurement shall be based on measurement gaps allocated for GSM carrier RSSI measurement as described in section 8.1.2.1 in TS 36.133 [4]. 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 in TS 36.133 [4]. The parameter N_{freq} is defined in clause 8.1.2.1.1 [4] as $N_{freq} = N_{freq, E\text{-}UTRA} + N_{freq, UTRA} + M_{gsm}$

Where:

$N_{freq, E\text{-}UTRA}$ is the number of E-UTRA carriers being monitored

$N_{freq, UTRA}$ is the number of UTRA carriers being monitored

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 Measurement Gap Repetition Period (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

The UE shall meet the measurement accuracy requirements stated for RXLEV in TS 45.008 [15], 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.

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. The requirements for BSIC re-confirmation can be found in section 8.1.2.4.5.1.2.2 of TS 36.133 [4].

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 section 8.1.2.4.5.2.1 in TS 36.133 [4] when a measurement gap pattern sequence is activated.
- The UE shall perform measurement reporting as defined in TS 36.331 [5].
- 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 [5].

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 $8*T_{re\text{-}confirm,GSM}$ 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.

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005 [16].

This measurement shall be made on GSM cells that are required with BSIC verified.

For DRX cycle length ≤ 40 ms, the initial GSM BSIC identification requirements corresponding to the non DRX requirements as specified in section 8.1.2.4.5.1.2.1 in TS 36.133 [4] shall apply.

For DRX cycle length > 40 ms, the UE shall make at least one attempt every N_{freq}*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 N_{freq}*60 s, 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 parameter N_{freq} is defined in section 8.1.2.1.1 in TS 36.133 [4].

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.

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 ≤ 40 ms, GSM BSIC re-confirmation requirements corresponding to the non DRX requirements as specified in section 8.1.2.4.5.1.2.2 in TS 36.133 [4] shall apply.

For DRX cycle length > 40 ms, at least every N_{freq}*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 N_{freq}*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 section 8.1.2.4.5.2.2.1 in TS 36.133 [4]. The parameter N_{freq} is defined in section 8.1.2.1.1 in TS 36.133 [4].

Reported measurements in event triggered measurement reports shall meet the requirements in section TS 36.331 [5].

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 section 8.1.2.4.5.1 of TS 36.133 [4]).

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 section 8.1.2.4.5.1 of TS 36.133 [4]. When L3 filtering is used an additional delay can be expected.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.4.5.2 and A.8.8.2.

8.8.2.4 Test description

8.8.2.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A Figure A.14.
2. The general test parameter settings are set up according to Table 8.8.2.4.1-1.
3. Propagation conditions are set according to Annex B clauses B.0.
4. Message contents are defined in clause 8.8.2.4.3.
5. There is one E-UTRA FDD carrier and one GSM cell specified in the test. Cell 1 (E-UTRA FDD cell) is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.8.2.4.1-1: 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-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD		As specified in section A.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD		As specified in section A.1.2.
Gap Pattern Id		0		As specified in 3GPP TS 36.133 [4] 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 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		
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 [9]
Access Barring Information	-	Not Sent		No additional delays in random access procedure.
DRX		ON		DRX related parameters are defined in Table 8.8.2.5-2
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	

8.8.2.4.2 Test procedure

The test consists of one active cell and one neighbour cell. 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 durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

In Test 1 when DRX = 40 ms is used, UE needs to be provided at least once every 500 ms with new Timing Advance Command MAC control element to restart the Timer Alignment Timer to keep the UE uplink time alignment. Furthermore, the UE is allocated with PUSCH resource at every DRX cycle. In Test 2 when DRX = 1280 ms is used, the uplink time alignment is not maintained and the UE needs to use RACH to obtain uplink allocation for measurement reporting.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
2. Set the parameters according to T1 in Table 8.8.2.5-1, 8.8.2.5-2, 8.8.2.5-3 and 8.8.2.5-4. propagation conditions are set according to Annex B clause B.1.1.T1 starts.
3. SS shall transmit an RRCConnectionReconfiguration message.
4. The UE shall transmit RRCConnectionReconfigurationComplete message.
5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table’s 8.8.2.5-1 and 8.8.1.5-4. T2 starts.
6. UE shall transmit a MeasurementReport message triggered by Event B1. If the overall delays measured from the beginning of time period T2 is less than 3162 ms for Test 1 or less than 44082 ms for Test 2 then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. The SS shall set a different BSIC on Cell 2, as the previous timing information of Cell 2 is invalid in the UE for the next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

11. Repeat step 1-10 for each sub-test in Table 8.8.2.4.1-1 as appropriate.

8.8.2.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.8.2.4.3-1: Common Exception messages for E-UTRAN FDD - GSM Event triggered reporting when DRX is used in AWGN

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-7 Table H.3.1-10 Table H.3.7-1 Table H.3.7-2 Table H.3.7-3

Table 8.8.2.4.3-2: *SystemInformationBlockType7*: Additional E-UTRAN FDD - GSM Event triggered reporting in AWGN

Derivation Path: TS 36.508 [7] clause 4.4.3.3, Table 4.4.3.3-3 SystemInformationBlockType7			
Information Element	**Value/remark**	**Comment**	**Condition**
commonInfo SEQUENCE {			
p-MaxGERAN	33 (33 dBm)		GSM 400 & GSM 900 & GSM 850 & GSM 700
	30 (30 dBm)		DCS 1800 & PCS 1900
}			

Table 8.8.2.4.3-3: *RRCConnectionReconfiguration*: Additional E-UTRAN FDD - GSM Event triggered reporting in AWGN

Derivation Path: TS 36.508 [7] clause 4.6.1, Table 4.6.1-8 RRCConnectionReconfiguration			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier-DL		
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
measConfig	MeasConfig -DEFAULT		
radioResourceConfigDedicated	RadioResourceConfigDedicated-HO		
}			
}			
}			
}			

Table 8.8.2.4.3-4: *ReportConfigInterRAT-B1-GERAN*: Additional E-UTRAN FDD - GSM Event triggered reporting in AWGN

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-7A ReportConfigInterRAT-B1-GERAN(GERAN-Thres)			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B1-GERAN(GERAN-Thres) ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventIdeventide CHOICE {			
eventB1 SEQUENCE {			
b1-Threshold CHOICE {			
B1-ThresholdGERAN CHOICE {			
thresholdGERAN	30 (-80 dBm)	-80 is actual value in dBm (30 - 110 dBm)	
}			
}			
}			
hysteresis	0 (0 dB)		
}			
}			
}			

Table 8.8.2.4.3-5: *SchedulingRequest-Config-DEFAULT*: Additional E-UTRAN FDD-GSM Event triggered reporting when DRX is used in AWGN

Derivation Path: TS 36.508 [7] clause 4.6.3, Table 4.6.3-20 SchedulingRequest-Config-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequest-Config-DEFAULT ::= CHOICE {			
setup SEQUENCE {			
sr-PUCCH-ResourceIndex	41	10 MHz channel bandwidth parameter	
sr-ConfigIndex	0		
dsr-TransMax	n4		
}			
}			

Table 8.8.2.4.3-6: *MeasResults*: Additional E-UTRAN FDD - GSM Event triggered reporting when DRX is used in AWGN

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListGERAN	MeasResultListGERAN		
}			
}			

Table 8.8.2.4.3-7: *MeasResultListGERAN:* Additional E-UTRAN FDD - GSM Event triggered reporting when DRX is used in AWGN

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListGERAN ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
MeasResultGERAN SEQUENCE {			
carrierFreq	CarrierFreqGERAN	Contains the carrier frequency of the target GERAN cell	
physCellId	PhysCellIdGERAN	Contains the Base Station Identity Code (BSIC)	
measResult SEQUENCE {			
rssi		Set according to specific test	
}			
}			

Table 8.8.2.4.3-8: *PRACH-Config-DEFAULT*: Additional E-UTRAN FDD - GSM Event triggered reporting when DRX is used in AWGN

Derivation Path: TS 36.508 [7] clause 7.3.2 Table 7.3.2-1			
Information Element	**Value/remark**	**Comment**	**Condition**
PRACH-Config-DEFAULT ::= SEQUENCE {			
prach-ConfigIndex	4		
}			

8.8.2.5 Test requirement

Tables 8.8.2.4.1-1, 8.8.2.5-1 and 8.8.2.5-4 define the primary level settings including test tolerances for E-UTRAN FDD-GSM event triggered reporting when DRX is used under AWGN conditions.

Table 8.8.2.5-1: Cell specific test parameters for E-UTRAN FDD (Cell # 1) for 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 D.1.1 (OP.1 FDD)		OP.1 FDD	
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	dB		
OCNG_RA Note 1	dB		
OCNG_RB Note 1	dB		
$\hat{E}_s/I_{ot}$	dB	4	4
N_{oc} 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 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 8.8.2.5-2: DRX-Configuration to be used in E-UTRAN FDD - GSM Event triggered reporting when DRX is used in AWGN

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 section 6.3.2 in 3GPP TS 36.331 [5].			

Table 8.8.2.5-3: *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
	Value	Value	
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331 [5].
sr-ConfigIndex	0	0	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213 [8].

Table 8.8.2.5-4: 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

In Test 1 when DRX cycle length = 40 ms is used, the overall delay measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event B1 triggered measurement report to Cell 2 on PUSCH.

In Test 2 when DRX cycle length = 1280 ms is used, the overall delay measured is defined as the time from the beginning of time period T2, to the moment the UE starts to send preambles on the PRACH for Scheduling Request (SR) to obtain allocation to send the measurement report to Cell 2 on PUSCH.

For both tests:

The overall delay may be up to 2xTTI_{DCCH} higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

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.

The overall delay measured when DRX cycle length is 40 ms test requirement is expressed as:

Overall delay measured = 2*$T_{Measurement Period, GSM}$ + $T_{identify, GSM}$ + TTI insertion uncertainty + DRX cycle length

$T_{Measurement Period, GSM}$ = 480 ms (as specified in table 8.1.2.4.5.2.1-1 of TS36.133 [4] clause 8.1.2.4.5.2.1)

$T_{identify, GSM}$ = 2160 ms (as specified in table 8.1.2.4.5.1.2.1-1 of TS36.133 [4] clause 8.1.2.4.5.1.2.1)

TTI insertion uncertainty = 2 ms

DRX cycle length = 40 ms

The overall delay measured when DRX cycle length is 40 ms shall be less than a total of 3162 ms.

The overall delay measured when DRX cycle length is 1280 ms test requirement is expressed as:

Overall delay measured = 2*$T_{Measurement Period, GSM}$ + N_{freq} * 30s + TTI insertion uncertainty + DRX cycle length

$T_{Measurement Period, GSM}$ = 6400 ms (as specified in table 8.1.2.4.5.2.1-1 of TS36.133 [4] clause 8.1.2.4.5.2.1)

N_{freq} = 1 (as specified in TS36.133 clause 8.1.2.1.1)

N_{freq} * 30 s = 30000 ms (as specified in TS36.133 [4] clause 8.1.2.4.5.2.2.2 for when DRX cycle length > 40 ms)

TTI insertion uncertainty = 2 ms

DRX cycle length = 1280 ms

The overall delay measured when DRX cycle length is 1280 ms shall be less than a total of 44082 ms.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.9 E-UTRAN FDD - UTRAN TDD measurements

8.9.1 E-UTRAN FDD - UTRAN TDD event triggered reporting under fading propagation conditions

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined
- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.9.1.1 Test purpose

To verify the UE's ability to make a correct reporting of an event under fading propagation conditions within the E-UTRA FDD - UTRA TDD cell search requirements.

8.9.1.2 Test applicability

This test applies to all types of release 8 and forward E-UTRA FDD UEs that support release 9 and forward UTRA TDD. Applicability requires support for FGI bits 15 and 22.

8.9.1.3 Minimum requirement

The measurement reporting delay shall be less than $T_{\text{identify, UTRA\_TDD}}$ in RRC_CONNECTED state.

When explicit neighbour list is provided and no DRX is used the UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{\text{identify, UTRA\_TDD}} = Max\left\{5000, T_{\text{basic identify UTRA\_TDD}} \cdot \frac{480}{T_{\text{inter1}}} \cdot N_{Freq}\right\} ms$$

where

$T_{\text{basic\_identify\_UTRA\_TDD}}$ = 800 ms is the time period used in the inter RAT equation where the maximum allowed time for the UE to identify a new UTRA TDD cell is defined.

T_{Inter1} = 30 ms. This is the minimum available time for inter-RAT measurement during 480 ms period

N_{Freq}: This is the number of UTRA carriers being monitored

If the UE does not require transmit gap to perform inter-RAT UTRA TDD measurements, the UE shall be able to identify a new detectable inter-RAT UTRA TDD cell belonging to the monitored set within 5000 ms.

A cell shall be considered detectable when

- P-CCPCH Ec/Io ≥ -8 dB,
- DwPCH_Ec/Io ≥ -5 dB.

When L3 filtering is used an additional delay can be expected.

When measurement gaps are scheduled for UTRA TDD inter RAT measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in Section 9.3 with measurement period given by

$$T_{\text{measurement UTRA\_TDD}} = Max\left\{T_{\text{Measurement\_Period UTRA\_TDD}}, T_{\text{basic measurement UTRA\_TDD}} \cdot \frac{480}{T_{\text{inter1}}} \cdot N_{Freq}\right\} ms$$

Where:

$T_{Measurement\_Period\ UTRA\_TDD}$ = 480 ms is the period used for calculating the measurement period $T_{measurement\_UTRA\_TDD}$ for UTRA TDD P-CCPCH RSCP measurements.

$T_{basic\_identify\_UTRA\_TDD}$ = 800 ms is the time period used in the inter RAT equation 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_{freq} and T_{inter1} are defined in section 8.1.2.1.1

If the UE does not need measurement gaps to perform UTRA TDD measurements, the measurement period for UTRA TDD measurements is 480 ms.

The UE shall be capable of performing UTRA TDD P-CCPCH RSCP measurements for $X_{basic\ measurementUTRA\_TDD}$ inter-frequency 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 $T_{Measurement\_UTRA\_TDD}$. Where $X_{basic\ measurementUTRA\_TDD}$= 6.

Reported measurements in event triggered measurement reports shall meet the requirements in TS 36.133 [4] 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 TS 36.133 [4] Section 8.1.2.4.3.1.1 When L3 filtering is used an additional delay can be expected.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.4.3 and A.8.9.

8.9.1.4 Test description

8.9.1.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.23.
2. The general test parameter settings are set up according to Table 8.9.1.4.1-1.
3. Propagation conditions are set according to Annex B clauses B.0.
4. Message contents are defined in clause 8.9.1.4.3.
5. There is one E-UTRA FDD serving cell and one UTRA TDD cell specified in the test. Cell 1 (E-UTRA FDD cell) is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.9.1.4.1-1: 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 section A.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.2.1
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 quantity		UTRA TDD PCCPCH RSCP	
Threshold other system	dBm	-75	UTRA TDD PCCPCH RSCP threshold for event B1.
Hysteresis	dB	0	
CP length		Normal	
TimeToTrigger	dB	0	
Filter coefficient		0	L3 filtering is not used
DRX			OFF
T1	s	5	
T2	s	15	

8.9.1.4.2 Test procedure

The test consists of one active cell and one neighbour cell. The test consists of two successive time periods, with time durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table’s 8.9.1.5-1 and 8.9.1.5-2. Propagation conditions are set according to Annex B clause B.1.1 and B.2.2. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table’s 8.9.1.5-1 and 8.9.1.5-2.

6. UE shall transmit a MeasurementReport message triggered by Event B1. If the overall delay measured from the beginning of time period T2 is less than 12880 ms then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

7. After the SS receive the MeasurementReport message in step 4) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. SS shall change set cell 2 cell parameter id =(current cell 2 cell parameter id +4) mod 16.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.9.1.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.9.1.4.3-1: Common Exception messages for E-UTRAN FDD - UTRAN TDD event triggered reporting under fading propagation conditions

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-4 Table H.3.1-7

Table 8.9.1.4.3-2: *ReportConfigInterRAT-B1-UTRA*: Additional E-UTRAN FDD - UTRAN TDD event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B1-UTRA(UTRA-Thres) ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventB1 SEQUENCE {			
b1-Threshold CHOICE {			
b1-ThresholdUTRA CHOICE {			
utra-RSCP	40	UTRA-Thres is actual RSCP value in dBm UTRA-Thres + 115	
}			
}			
}			
}			
hysteresis	0		
}			
}			
}			

Table 8.9.1.4.3-3: *MeasuredResults*: Additional E-UTRAN FDD - UTRAN TDD event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasuredResults ::= SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListUTRA	MeasResultListUTRA		
}			
}			

Table 8.9.1.4.3-4: *MeasResultListUTRA*: Additional E-UTRAN FDD - UTRAN TDD event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellIdphysicallCellIdentity CHOICE {			
tdd	UTRA-TDD-CellIdentity		
}			
measResult SEQUENCE {			
utra-RSCP	Set according to specific test		
}			
}			

Table 8.9.1.4.3-5: CellGlobalId-UTRA: Additional E-UTRAN FDD - UTRAN TDD event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.4			
Information Element	**Value/remark**	**Comment**	**Condition**
CellGlobalIdUTRA ::= SEQUENCE {			
plmn-Identity	PLMN-Identity		
cellIdentity		BIT STRING (SIZE (28))	
}			

8.9.1.5 Test requirement

Tables 8.9.1.4.1-1, 8.9.1.5-1 and 8.9.1.5-2 define the primary level settings including test tolerances for E-UTRAN FDD - UTRAN TDD event triggered reporting under fading propagation conditions in synchronous cells test.

Table 8.9.1.5-1: 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 Number		1	
$BW_{channel}$	MHz	10	
OCNG Patterns defined in D.1.1 (OP.1 FDD)		OP.1 FDD	
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	dB		
OCNG_RA Note1	dB		
OCNG_RB Note 1	dB		

N_{oc}	dBm/15KHz	-98	
RSRP	dBm	-94	-94
$\hat{E}_s/I_{ot}$	dB	4	4
P-SCH_RP	dBm	-94	
S-SCH_RP	dBm	-94	
Propagation Condition		ETU70	
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: The resources for uplink transmission are assigned to the UE prior to the start of time period T2.			

Table 8.9.1.5-2: 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 Number (NOTE1)		Channel1			
PCCPCH_Ec/Ior	dB	-Infinity		-3	
DwPCH_Ec/Ior	dB	-Infinity			0
OCNS_Ec/Ior		-Infinity		-3	
$\hat{I}_{or}/I_{oc}$	dB	-Infinity		9	
I_{oc}	dBm/1.28 MHz	-70			
PCCPCH_RSCP	dB	-Infinity		-64	
PropagationCondition		Case 3 (NOTE2)			
NOTE 1: The DPCH of the cell is located in a timeslot other than 0. NOTE 2: Case 3 propagation conditions are specified in TS 25.102 Annex B.					

The overall delays measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event B1 triggered measurement report to Cell 2.

The overall delays measured test requirement is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{\text{identify, UTRA\_TDD}}$

$$T_{\text{identify, UTRA\_TDD}} = Max\left\{5000, T_{\text{basic identify UTRA\_TDD}} \cdot \frac{480}{T_{\text{inter1}}} \cdot N_{Freq}\right\} ms \backslash$$

$T_{\text{basic\_identify\_UTRA\_TDD}} = 800$ ms

$T_{\text{Inter1}} = 30$ ms

$N_{\text{Freq}} = 1$

TTI insertion uncertainty = 2 ms

The overall delays measured shall be less than a total of 12802 ms in this test case (note: this gives a total of 12800 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.9.2 E-UTRAN FDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

8.9.2.1 Test purpose

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 TS 36.133 [4] section 8.1.2.4.4 under AWGN propagation conditions.

8.9.2.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 9 and forward that support UTRA TDD. Applicability requires support for FGI bit 15.

8.9.2.3 Minimum conformance requirements

When explicit neighbour list is provided and no DRX is used or when DRX cycle length ≤ 40 ms the UE shall be able to identify a new detectable cell belonging to the monitored set within $T_{identify, enhanced\_UTRA\_TDD}$:

$$T_{identify,\ enhanced\_UTRA\_TDD} = (T_{basic\_identify\_enhanced\_UTRA\_TDD} \cdot \frac{480}{T_{inter1}} + 480) \cdot N_{Freq} \quad ms$$

If the UE does not require transmit gap to perform inter-RAT UTRA TDD measurements, the UE shall be able to identify a new detectable inter-RAT UTRA TDD cell belonging to the monitored set within 500 ms.

A cell shall be considered detectable when:

- P-CCPCH_Ec/Io ≥ -6 dB,
- DwPCH_Ec/Io ≥ -1 dB

When L3 filtering is used an additional delay can be expected.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.4.4 and A.8.9.2.

8.9.2.4 Test description

8.9.2.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and faders and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.22.
2. The general test parameter settings are set up according to Table 8.9.2.4.1-1.
3. Propagation conditions are set according to Annex B clauses B.0.
4. Message contents are defined in clause 8.9.2.4.3.
5. There is one E-UTRA TDD serving cell and one UTRA TDD cell specified in the test. Cell 1 (E-UTRA TDD cell) is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test. Cell 2 (UTRAN TDD cell) is to be searched. Gap pattern configuration # 0 as defined in TS 36.133 [4] table 8.1.2.1-1 is provided.

Table 8.9.2.4.1-1: General test parameters for E-UTRAN FDD- UTRAN TDD 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 section A.1.1.
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in section A.2.1.
Gap Pattern Id		0	As specified in 3GPP TS 36.133 [4] 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.
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) measurement quantity		P-CCPCH RSCP	
Thresh	dBm	-83	Absolute P-CCPCH RSCP threshold for event B1
Hysteresis	dB	0	
Time To Trigger	ms	0	
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	

8.9.2.4.2 Test procedure

The test consists of one active cell and one neighbour cell. 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 durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Tables 8.9.2.5-1 and 8.9.2.5-2. Propagation conditions are set according to Annex B clause B.1.1. T1 starts.

3. The SS shall transmit an *RRCConnectionReconfiguration* with Event B1 configured message.

4. The UE shall transmit *RRCConnectionReconfigurationComplete* message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Tables 8.9.2.5-1 and 8.9.2.5-2. T2 starts.

6. UE shall transmit a *MeasurementReport* message triggered by Event B1. If the overall delay measured from the beginning of time period T2 is less than 1122 ms then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. SS shall set Cell 2 cell parameter id = (current Cell 2 cell parameter id+4) mod 16 for next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),

or
- switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.9.2.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.9.2.4.3-1: Common Exception messages for E-UTRAN FDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-4 Table H.3.1-7

Table 8.9.2.4.3-2: *ReportConfigInterRAT-B1-UTRA*: Additional E-UTRAN FDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

Derivation Path: TS 36.508[7] clause 4.6.6 Table 4.6.6-7B			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B1-UTRA(UTRA-Thres) ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventB1 SEQUENCE {			
b1-Threshold CHOICE {			
b1-ThresholdUTRA CHOICE {			
utra-RSCP	32	UTRA-Thres is actual RSCP value in dBm UTRA-Thres + 115	UTRA-TDD
}			
}			
}			
}			
hysteresis	0 (0dB)	The actual value is IE value * 0.5 dB.	
timeToTrigger	ms0		
}			
}			
}			

Table 8.9.2.4.3-3: *MeasResults*: Additional E-UTRAN FDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

Derivation Path: TS 36.331[5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListUTRA	MeasResultListUTRA		
}			
}			

Table 8.9.2.4.3-4: *MeasResultListUTRA*: E-UTRAN FDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

Derivation Path: TS 36.331[5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId CHOICE {			
tdd	PhysCellIdUTRA-TDD	INTEGER (0..127)	
}			
measResult SEQUENCE {			
utra-RSCP		Set according to specific test INTEGER (-5..91)	
}			
}			

8.9.2.5 Test requirement

Tables 8.9.2.4.1-1, 8.9.2.5-1 and 8.9.2.5-2 define the primary level settings including test tolerances for E-UTRAN FDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions test.

Table 8.9.2.5-1: Cell specific test parameters for cell #1 E-UTRAN FDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

Parameter	Unit	Cell 1	
		T1	T2
E-UTRA RF Channel Number		1	
$BW_{channel}$	MHz	10	
OCNG Patterns defined in D.1.1 (OP.1 FDD)		OP.1 FDD	
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	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		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.
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 8.9.2.5-2: Cell specific test parameters for cell #2 E-UTRAN FDD - UTRAN TDD enhanced cell identification under AWGN propagation conditions

Parameter	Unit	Cell 2 (UTRA TDD)			
Timeslot Number		0		DwPTS	
		T1	T2	T1	T2
UTRA RF Channel Number[Note1]		1			
P-CCPCH_Ec/Ior	dB	-4.77	-4.77		
DwPCH_Ec/Ior	dB			0	0
OCNS_Ec/Ior[Note2]	dB	-1.76	-1.76		
$\hat{I}_{or}/I_{oc}$	dB	- infinity	8	- infinity	8
I_{oc}	dBm/1.28 MHz	-79.4			
P-CCPCH RSCP[Note3]	dBm	- infinity	-76.17	n.a.	n.a.
P-CCPCH_Ec/Io[Note3]	dB	- infinity	-5.41	n.a.	n.a.
DwPCH_Ec/Io[Note3]	dB	n.a.	n.a.	- infinity	-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/Io and DwPCH_Ec/Io levels have been derived from other parameters for information purposes. They are not settable parameters themselves.					

The overall delays measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event B1 triggered measurement report to Cell 2.

The overall delays measured in the test may be up to 2xTTI_{DCCH} higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

The overall delays measured test requirement is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify, enhanced\_UTRA\_TDD}$

$$T_{identify,\ enhanced\_UTRA\_TDD} = (T_{basic\_identify\_enhanced\_UTRA\_TDD} \cdot \frac{480}{T_{inter1}} + 480) \cdot N_{Freq} \quad ms$$

$T_{basic\_identify\_enhanced\_UTRA\_TDD}$ = 80 ms. It is the time period used in the inter RAT equation where the maximum allowed time for the UE to identify a new UTRA TDD cell is defined.

T_{Inter1} = 60 ms

N_{Freq} = 1. It is defined in TS 36.133 [4] clause 8.1.2.1.1.

TTI insertion uncertainty = 2 ms

The overall delays measured shall be less than a total of 1122 ms in this test case (note: this gives a total of 1120 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.10 E-UTRAN TDD - GSM measurements

8.10.1 E-UTRAN TDD - GSM event triggered reporting in AWGN

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined

- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.10.1.1 Test purpose

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 TS 36.133[4] section 8.1.2.4.6.

8.10.1.2 Test applicability

This test applies to all types of E-UTRA TDD UE release 8 and forward that support GSM. Applicability requires support for FGI bits 15 and 23.

8.10.1.3 Minimum conformance requirements

The requirements in this section apply only to UE supporting E-UTRAN TDD 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 TS 36.133[4] Table 8.1.2.1-1 is configured by E-UTRAN 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.

This measurement shall be based on measurement gaps allocated for GSM carrier RSSI measurement as described in TS 36.133[4] section 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 N_{freq}*480 ms. The parameter N_{freq} is defined in TS 36.133[4] section 8.1.2.1.1.

The UE shall meet the measurement accuracy requirements stated for RXLEV in TS 45.008 [15], 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.

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 TDD 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 TS 36.133[4] section 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 TS 36.133[4] section 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 TS 36.133[4] section 8.1.2.4.5.1 when a measurement gap pattern sequence is activated.

- The UE shall perform measurement reporting as defined in TS 36.331 [5].

- 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 [5].

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.

$T_{re-confirm,GSM}$ 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 8.10.1.3-1.

Table 8.10.1.3-1: 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 TS 45.005 [16].

This measurement shall be based on the measurement gaps used for Initial BSIC identification as described in TS 36.133[4] section 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 8.10.1.3-2. The requirements in the table represent the time required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier.

Table 8.10.1.3-2

Number of carriers other than GSM	$T_{identify,gsm}$(ms)		$T_{reconfirm,gsm}$(ms)	
	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

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 TS 36.133[4] section 8.1.2.4.5.1.2, the UE shall attempt to decode the BSIC falling within the measurement gap according to table 8.10. 1.3 - 2. If more than one BSIC can be decoded within the same measurement gap, priority shall be given to the least recently decoded BSIC.

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 TS 36.133[4] section 8.1.2.4.5.1.2.1.

Reported measurements in periodically triggered measurement reports shall meet the requirements in TS 36.133[4] section 9.

Reported measurements in event triggered measurement reports shall meet the requirements in TS 36.133[4] 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 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 TS 36.133[4] section 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 TS 36.133[4] section 8.1.2.4.5.1. When L3 filtering is used an additional delay can be expected.

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in TS 36.133[4] section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in TS 36.133[4] section 8.1.2.4.5.1.4 Event Triggered Reporting.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.4.5.1 and A8.10.1

8.10.1.4 Test description

8.10.1.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.14 for UEs that support receive diversity.

2. The general test parameter settings are set up according to Table 8.10.1.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.10.1.4.3.

5. There is one E-UTRA TDD serving cell and one GSM cell specified in the test. Cell 1 (E-UTRA TDD cell) is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.10.1.4.1-1: 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 section A.1.2.
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in section A.2.2.
Gap Pattern Id		0	As specified in 3GPP TS 36.133[4] 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 Absolute RF Channel Number 1 (GSM cell)
Special subframe configuration		6	As specified in table 4.2-1 in 3GPP TS 36.211
Uplink-downlink configuration		1	As specified in table 4.2-2 in 3GPP 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	

8.10.1.4.2 Test procedure

The test consists of one active cell and one neighbour cell. The test consists of two successive time periods, with time durations of T1 and T2 respectively. During time duration T1, the UE shall not have any timing information of Cell 2.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table's 8.10.1.5-1 and 8.10.1.5-2. Propagation conditions are set according to Annex B clauses B.1.1. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table's 8.10.1.5-1 and 8.10.1.5-2.

6. UE shall transmit a MeasurementReport message triggered by Event B1. If the overall delay measured from the beginning of time period T2 is less than 3122 ms then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.

7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. SS shall set a different BSIC on Cell 2, as the previous timing information of Cell 2 is invalid in the UE for the next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.

8.10.1.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.10.1.4.3-1: Common Exception messages for E-UTRAN TDD-GSM event triggered reporting in AWGN

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-7 Table H.3.1-10

Table 8.10.1.4.3-2: *SystemInformationBlockType7*: Additional E-UTRAN TDD - GSM event triggered reporting in AWGN

Derivation Path: TS 36.508 [7] clause 4.4.3.3, Table 4.4.3.3-3 SystemInformationBlockType7			
Information Element	**Value/remark**	**Comment**	**Condition**
commonInfo SEQUENCE {			
p-MaxGERAN	33 (33 dBm)		GSM 400 & GSM 900 & GSM 850 & GSM 700
	30 (30 dBm)		DCS 1800 & PCS 1900
}			

Table 8.10.1.4.3-3: *ReportConfigInterRAT-B1-GERAN*: Additional E-UTRAN TDD - GSM Event triggered reporting in AWGN

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-7A ReportConfigInterRAT-B1-GERAN(GERAN-Thres)			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B1-GERAN(GERAN-Thres) ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventIdeventide CHOICE {			
eventB1 SEQUENCE {			
b1-Threshold CHOICE {			
B1-ThresholdGERAN CHOICE {			
b1-ThresholdGERAN	30 (-80 dBm)	-80 is actual value in dBm (30 - 110 dBm)	
}			
}			
}			
}			
hysteresis	0 (0dB)	The actual value is IE value * 0.5 dB INTEGER(0..30)	
timeToTrigger	ms0		
}			
}			

Table 8.10.1.4.3-4: *MeasResults*: Additional E-UTRAN TDD - GSM event triggered reporting in AWGN

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListGERAN	MeasResultListGERAN		
}			
}			

Table 8.10.1.4.3-5: *MeasResultListGERAN*: Additional E-UTRAN TDD - GSM event triggered in AWGN

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListGERAN ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
carrierFreq	CarrierFreqGERAN		
physCellId SEQUENCE {			
networkColourCode		BIT STRING(SIZE(3))	
baseStationColourCode		BIT STRING(SIZE(3))	
}			
measResult SEQUENCE {			
rssi		Set according to specific test	
}			
}			

Table 8.10.1.4.3-6: *CarrierFreqGERAN*: Additional E-UTRAN TDD - GSM event triggered reporting in AWGN

Derivation Path: 36.331 clause 6.3.4			
Information Element	**Value/remark**	**Comment**	**Condition**
CarrierFreqGERAN ::= SEQUENCE {			
arfcn		INTEGER (0..1023)	
bandIndicator		ENUMERATED {dcs1800, pcs1900}	
}			

8.10.1.5 Test requirement

The test parameters are given in Tables 8.10.1.4.1-1, 8.10.1.5-1 and 8.10.1.5-2 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 8.10.1.5-1: 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	
$BW_{channel}$	MHz	10	
OCNG Pattern defined in D.2.1 (OP.1 TDD)		OP.1 TDD	
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	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		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.
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 8.10.1.5-2: 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		ARFCN 1	
RXLEV	dBm	-Infinity	-75
GSM BSIC		N/A	Valid

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 rate of correct events observed during repeated tests shall be at least 90% with a confidence level of 95%.

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.

The overall delays measured shall be less than a total of 3122 ms in this test case (note: this gives 960 ms for measurement reporting delay plus 2160 for BSIC identification and plus 2 ms for TTI insertion uncertainty).

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.10.2 E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined
- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.10.2.1 Test purpose

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 TS 36.133[4] section 8.1.2.4.6.

8.10.2.2 Test applicability

This test applies to all types of E-UTRA TDD UE release 8 and forward that support GSM. Applicability requires support for FGI bits 5, 15 and 23.

8.10.2.3 Minimum conformance requirements

The requirements in this section apply only to UE supporting E-UTRAN TDD 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 TS 36.133[4] Table 8.1.2.1-1 is configured by E-UTRAN 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.

This measurement shall be based on measurement gaps allocated for GSM carrier RSSI measurement as described in TS 36.133[4] section 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 8.10.2.3-1. The parameter N_{freq} is defined in TS 36.133[4] section 8.1.2.1.1.

Table 8.10.2.3-1: GSM measurement period for large DRX

DRX cycle length (s)	$T_{measure,GSM}$ (s) (DRX cycles)
≤0.04	Non DRX Requirements are applicable
0.04<DRX-cycle≤ 0.08	Note (6*N_{freq})
0.08<DRX-cycle≤ 2.56	Note (5*N_{freq})
Note: Time depends upon the DRX cycle in use	

The UE shall meet the measurement accuracy requirements stated for RXLEV in TS 45.008 [15], 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.

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 TDD 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 TS 36.133[4] section 8.1.2.4.5.2.1 when a measurement gap pattern sequence is activated.

- The UE shall perform measurement reporting as defined in TS 36.331 [5].

- 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 [5].

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 TS 45.005 [16].

This measurement shall be made on GSM cells that are requested with BSIC verified.

For DRX cycle length ≤ 40 ms, the initial GSM BSIC identification requirements corresponding to the non DRX requirements as specified in section TS 36.133 [4] 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 N_{freq}*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 N_{freq}*60 s, 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 parameter N_{freq} is defined in TS 36.133 [4] section 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.

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 ≤ 40 ms, the GSM BSIC re-conformation requirements corresponding to the non DRX requirements as specified in TS 36.133 [4] section 8.1.2.4.5.1.2.2 shall apply.

For DRX cycle length > 40 ms, at least every N_{freq}*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 N_{freq}*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 TS 36.133 [4] section 8.1.2.4.5.2.2.1. The parameter N_{freq} is defined in TS 36.133 [4] section 8.1.2.1.1.

Reported measurements in periodically triggered measurement reports shall meet the requirements in TS 36.133 [4] section 9.

Reported measurements in event triggered measurement reports shall meet the requirements in TS 36.133 [4] 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 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 TS 36.133 [4] section 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 TS 36.133 [4] section 8.1.2.4.5.2.1. When L3 filtering is used an additional delay can be expected.

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in TS 36.133[4] section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in TS 36.133[4] section 8.1.2.4.5.2.4 Event Triggered Reporting.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.4.5.2 and A8.10.2

8.10.2.4 Test description

8.10.2.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10 MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and AWGN noise sources to the UE antenna connectors as shown in TS 36.508 [7] Annex A figure A.14 for UEs that support receive diversity.

2. The general test parameter settings are set up according to Table 8.10.2.4.1-1.

3. Propagation conditions are set according to Annex B clauses B.0.

4. Message contents are defined in clause 8.10.2.4.3.

5. In these tests, there are two cells, one E-UTRAN cell and one GSM cell, and gap pattern configuration # 0 as defined in TS 36.133 [4] Table 8.1.2.1-1 is provided. Cell 1 (E-UTRA TDD cell) is the cell used for connection setup with the power level set according to Annex C.0 and C.1 for this test.

Table 8.10.2.4.1-1: 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-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD		As specified in section A.1.2. Note that UE may only be allocated at *On Duration*
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD		As specified in section A.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 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 3GPP TS 36.211 section 4.2 Table 4.2-2
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		
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 8.10.2.5-2
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	

8.10.2.4.2 Test procedure

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.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
2. Set the parameters according to T1 in Table's 8.10.2.5-1 and 8.10.2.5-4. Propagation conditions are set according to Annex B clauses B.1.1. T1 starts.
3. SS shall transmit an RRCConnectionReconfiguration message.
4. The UE shall transmit RRCConnectionReconfigurationComplete message.
5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table's 8.10.2.5-1 and 8.10.2.5-4. T2 starts.
6. UE shall transmit a MeasurementReport message triggered by Event B1. If the overall delay measured from the beginning of time period T2 is less than 3162 ms for Test1 or less than 44082 ms for Test2 then the number of successful tests is increased by one. If the UE fails to report the event within the overall delays measured requirement then the number of failure tests is increased by one.
7. After the SS receive the MeasurementReport message in step 6) or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.
8. SS shall set a different BSIC on Cell 2, as the previous timing information of Cell 2 is invalid in the UE for next iteration of the test procedure loop.
9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
10. Repeat step 2-9 until the confidence level according to Tables G.2.3-1 in Annex G clause G.2 is achieved.
11. Repeat step 1-10 for each sub-test in Table 8.10.2.4.1-1 as appropriate.

8.10.2.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.10.2.4.3-1: Common Exception messages for E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-7 Table H.3.1-10 Table H.3.7-1 Table H.3.7-2 Table H.3.7-3

Table 8.10.2.4.3-2: *SystemInformationBlockType7*: Additional E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

Derivation Path: TS 36.508 [7] clause 4.4.3.3, Table 4.4.3.3-3 SystemInformationBlockType7			
Information Element	**Value/remark**	**Comment**	**Condition**
commonInfo SEQUENCE {			
p-MaxGERAN	33 (33 dBm)		GSM 400 & GSM 900 & GSM 850 & GSM 700
	30 (30 dBm)		DCS 1800 & PCS 1900
}			

Table 8.10.2.4.3-3: *PRACH-ConfigSIB-DEFAULT*: Additional E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

Derivation Path: 36.508 clause 4.6.3 Table 4.6.3-7a PRACH-ConfigSIB-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
PRACH-ConfigSIB-DEFAULT ::= SEQUENCE {			
prach-ConfigInfo SEQUENCE {			
prach-ConfigIndex	4		TDD
}			
}			

Table 8.10.2.4.3-4: *RRCConnectionReconfiguration*: Additional E-UTRAN TDD - GSM Event triggered reporting when DRX is used in AWGN

Derivation Path: TS 36.508 [7] clause 4.6.1, Table 4.6.1-8 RRCConnectionReconfiguration			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier-DL		
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
measConfig	MeasConfig -DEFAULT		
radioResourceConfigDedicated	RadioResourceConfigDedicated-HO		
}			
}			
}			
}			

Table 8.10.2.4.3-5: *ReportConfigInterRAT-B1-GERAN*: Additional E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B1-GERAN(GERAN-Thres) ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventB1 SEQUENCE {			
b1-Threshold CHOICE {			
B1-ThresholdGERAN CHOICE {			
b1-ThresholdGERAN	30	GERAN-Thres is actual value in dBm	
}			
}			
}			
}			
hysteresis	0	The actual value is IE value * 0.5 dB INTEGER(0..30)	
timeToTrigger	ms0		
}			
}			
}			

Table 8.10.2.4.3-6: SchedulingRequest-Config-DEFAULT: Additional E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

Derivation Path: TS 36.508 [7] clause 4.6.3, Table 4.6.3-20: SchedulingRequest-Config-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
SchedulingRequest-Config-DEFAULT ::= CHOICE {			
setup SEQUENCE {			
sr-PUCCH-ResourceIndex	41	Channel-bandwidth-dependent parameter	
sr-ConfigIndex	2		
dsr-TransMax	n4		
}			
}			

Table 8.10.2.4.3-7: *MeasResults*: Additional E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListGERAN	MeasResultListGERAN		
}			
}			

Table 8.10.2.4.3-8: *MeasResultListGERAN*: Additional E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListGERAN ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
carrierFreq	CarrierFreqGERAN		
physCellId SEQUENCE {			
networkColourCode		BIT STRING(SIZE(3))	
baseStationColourCode		BIT STRING(SIZE(3))	
}			
measResult SEQUENCE {			
rssi		Set according to specific test	
}			
}			

Table 8.10.2.4.3-9: *CarrierFreqGERAN*: Additional E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

Derivation Path: 36.331 clause 6.3.4			
Information Element	**Value/remark**	**Comment**	**Condition**
CarrierFreqGERAN ::= SEQUENCE {			
arfcn		INTEGER (0..1023)	
bandIndicator		ENUMERATED {dcs1800, pcs1900}	
}			

8.10.2.5 Test requirement

Cell specific test parameters are given in Table 8.10.2.5-1 for E-UTRAN and in Table A.8.10.2.5-4 for GSM. DRX configuration for Test1 and Test2 are given in Table 8.10.2.5-2 and time alignment timer and scheduling request related parameters in Table 8.10.2.5-3.

Table 8.10.2.5-1: 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 D.2.1 (OP.1 TDD)		OP.1 TDD	
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	dB		
OCNG_RA[Note 1]	dB		
OCNG_RB[Note 1]	dB		

$\hat{E}_s/I_{ot}$	dB	4	4
N_{oc} 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 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 8.10.2.5-2: drx-Configuration to be used in E-UTRAN TDD-GSM event triggered reporting when DRX is used in AWGN

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 section 6.3.2 in 3GPP TS 36.331.			

Table 8.10.2.5-3: *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
	Value	Value	
TimeAlignmentTimer	sf500	sf500	For further information see section 6.3.2 in 3GPP TS 36.331.
sr-ConfigIndex	2	2	For further information see section 6.3.2 in 3GPP TS 36.331 and section10.1 in 3GPP TS 36.213.

Table 8.10.2.5-4: 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		ARFCN 1	
RXLEV	dBm	-Infinity	-75
GSM BSIC		N/A	Valid

In Test 1 when DRX cycle length = 40 ms is used, the overall delay measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event B1 triggered measurement report to Cell 2 on PUSCH. In Test 2 when DRX cycle length = 1280 ms is used, the overall delay measured is defined as the time from the beginning of time period T2, to the moment the UE starts to send preambles on the PRACH for Scheduling Request (SR) to obtain allocation to send the measurement report to Cell 2 on PUSCH.

For both tests:

The overall delay may be up to $2xTTI_{DCCH}$ higher than the measurement reporting delays because of TTI insertion uncertainty of the measurement report in DCCH.

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

The overall delay measured when DRX cycle length is 40 ms test requirement is expressed as:

Overall delay measured = 2*$T_{Measurement Period, GSM}$ + $T_{identify, GSM}$ + TTI insertion uncertainty + DRX cycle length

$T_{Measurement Period, GSM}$ = 480 ms (as specified in table 8.1.2.4.5.2.1-1 of TS36.133 [4] clause 8.1.2.4.5.2.1)

$T_{identify, GSM}$ = 2160 ms (as specified in table 8.1.2.4.5.1.2.1-1 of TS36.133 [4] clause 8.1.2.4.5.1.2.1)

TTI insertion uncertainty = 2 ms

DRX cycle length = 40 ms

The overall delay measured when DRX cycle length is 40 ms shall be less than a total of 3162 ms.

The overall delay measured when DRX cycle length is 1280 ms test requirement is expressed as:

Overall delay measured = 2*$T_{Measurement Period, GSM}$ + N_{freq} * 30s + TTI insertion uncertainty + DRX cycle length

$T_{Measurement Period, GSM}$ = 6400 ms (as specified in table 8.1.2.4.5.2.1-1 of TS36.133 [4] clause 8.1.2.4.5.2.1)

N_{freq} = 1 (as specified in TS36.133 clause 8.1.2.1.1)

N_{freq} * 30 s = 30000 ms (as specified in TS36.133 [4] clause 8.1.2.4.5.2.2.2 for when DRX cycle length > 40 ms)

TTI insertion uncertainty = 2 ms

DRX cycle length = 1280 ms

The overall delay measured when DRX cycle length is 1280 ms shall be less than a total of 44082 ms.

For the test to pass, the total number of successful tests shall be more than 90% of the cases with a confidence level of 95%.

8.11 Monitoring of Multiple Layers

8.11.1 Multiple E-UTRAN FDD-FDD Inter-frequency event triggered reporting under fading propagation conditions

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined
- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.11.1.1 Test purpose

To verify that the UE makes correct reporting of multiple events under fading propagation conditions within the E-UTRA FDD inter-frequency cell search requirements.

8.11.1.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 8 and forward. Applicability requires support for FGI bit 25.

8.11.1.3 Minimum conformance requirements

When measurement gaps are scheduled the UE shall be able to identify a new FDD inter-frequency within $T_{Identify\_Inter}$ according to the following expression:

$$T_{Identify\_Inter} = T_{Basic\_Identify\_Inter} \cdot \frac{480}{T_{Inter1}} \cdot N_{freq} \quad ms$$

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_{freq} is defined in TS 36.133 [4] section 8.1.2.1.1 and T_{inter1} is defined in TS 36.133 [4] section 8.1.2.1

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP and RSRP Ês/Iot according to Annex I.2.3 for a corresponding Band,
- other RSRP related side conditions given in TS36.133 [4] Section 9.1 are fulfilled,
- SCH_RP$|_{dBm}$ and SCH Ês/Iot according to Annex I.2.3 for a corresponding Band.

When measurement gaps are scheduled for FDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in TS 36.133 [4] sub-clause 9.1.3 with measurement period given by Table 8.11.1.3-1.

Table 8.11.1.3-1: RSRP measurement period and measurement bandwidth

Configuration	Physical Layer Measurement period: $T_{Measurement\_Period\_Inter\_FDD}$ [ms]	Measurement bandwidth [RB]
0	480 x N_{freq}	6
1 (Note)	240 x N_{freq}	50
Note: This configuration is optional		

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 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 8.11.1.3-1.

Reported measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] 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 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 TS 36.133 [4] clause 8.1.2.3.1.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period Tidentify_intra defined in TS 36.133 [4] section 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 TMeasurement_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 an additional delay can be expected

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.3.1 and A.8.11.1.

8.11.1.4 Test description

8.11.1.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and AWGN noise source to the UE antenna connectors as shown in TS 36.508 [7] Annex A Figure A. 19.

2. The general test parameter settings are set up according to Table 8.11.1.4.1-1.

3. Propagation conditions are set according to Annex B clause B.0.

4. Message contents are as defined in clause 8.11.1.4.3.

5. In this test, there are three E-UTRA cells, cell1, cell2 and cell3, all on different frequencies. Cell 1 (EUTRA FDD cell on RF channel number 1) is the cell used for registration with the power level set according to Annex C.0 and C.1 for this test.

Table 8.11.1.4.1-1: 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 section A.1.1
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.2.1
E-UTRA RF Channel Number		1, 2, 3	Three 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 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 3GPP TS 36.133 section 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-UTRAN FDD cells		3 ms	Asynchronous cells
T1	s	5	
T2	s	10	

8.11.1.4.2 Test procedure

This test scenario comprised of 3 E-UTRA FDD cells operating on different frequencies. 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. At T1 the UE is camped on to Cell 1.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table 8.11.1.5-1. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.11.1.5-1.

6. UE shall transmit MeasurementReport messages triggered by event A3 for cell 2 and cell 3, respectively.

6a. If the measurement reporting delay for cell 2 from the beginning of the time period T2 is less than 7682 ms the number of “cell 2 successes” is increased by one.

6b. If the measurement reporting delay for cell 3 from the beginning of time period T2 is less than 7682 ms the number of “cell 3 successes” is increased by one.

7. After the SS receives the MeasurementReport messages in step 6 or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop. Set Cell 3 physical cell identity = ((current cell 3 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
- transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
or
- switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Table G.2.3-1 in Annex G clause G.2 is achieved. The pass/ fail decisions are done separated for procedure steps 6a) and 6b). In general the number of repetitions up to the decision are different for 6a) and 6b). If one of 6a) or 6b) is passed, steps 1-8 are repeated, however the counter for the passed event is not anymore served. If one of 6a) or 6b) is failed, the test can be stopped.

8.11.1.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.11.1.4.3-1: Common Exception messages

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-7

Table 8.11.1.4.3-2: *MeasConfig-DEFAULT*: Additional Multiple E-UTRAN FDD-FDD inter frequency event triggered reporting under fading propagation conditions

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1 *MeasConfig-DEFAULT*:			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
measObjectToRemoveList	Not present		
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	3 entry		
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f1	f1 is the frequency of the serving cell	
measObject CHOICE {			
MeasObjectEUTRA	MeasObjectEUTRA-GENERIC(f1)	serving frequency	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f2	f2 is the frequency of the neighbouring cell(inter frequency cell)	
measObject CHOICE {			
MeasObjectEUTRA	MeasObjectEUTRA-GENERIC(f2)	inter frequency	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f3	f3 is the frequency of the neighbouring cell(inter frequency cell)	
measObject CHOICE {			
MeasObjectEUTRA	MeasObjectEUTRA-GENERIC(f3)	inter frequency	
}			
}			
}			
reportConfigToRemoveList	Not present		
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId))OF SEQUENCE {	1 entry		
reportConfigId	idReportConfig-A3		
reportConfig	ReportConfigEUTRA-A3		
}			
measIdToRemoveList	Not present		
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) of SEQUENCE {	2 entry		
measIdToAddMod ::= SEQUENCE {			
measId	1		
measObjectId	IdMeasObject-f2		
reportConfigId	idReportConfig-A3		
}			
measIdToAddMod ::= SEQUENCE {			
measId	2		
measObjectId	IdMeasObject-f3		
reportConfigId	idReportConfig-A3		
}			
}			
quantityConfig	QuantityConfig-DEFAULT		
measGapConfig	MeasGapConfig-GP1		
s-Measure	Not present		
preRegistrationInfoHRPD	Not present		
speedStatePars	Not present		

}			

Table 8.11.1.4.3-3: *ReportConfigEUTRA-A3*: Additional Multiple E-UTRAN FDD-FDD inter frequency event triggered reporting under fading propagation conditions

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12 (-6 dB)	-6 is actual value in dB (-6 * 0.5 dB)	
}			
}			
Hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			

Table 8.11.1.4.3-4: *MeasResults*: Additional Multiple E-UTRAN FDD-FDD inter frequency event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.11.1.4.3-5: *MeasResults*: Additional Multiple E-UTRAN FDD-FDD inter frequency event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.11.1.4.3-6: *MeasResultListEUTRA*: Additional Multiple E-UTRAN FDD-FDD inter frequency event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultEUTRA {			
MeasResultEUTRA ::= SEQUENCE {			
physCellId	PhysicalCellIdentity		
measResult SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
}			

8.11.1.5 Test requirement

Table 8.11.1.4.1-1 and 8.11.1.5-1 define the primary level settings including test tolerances for three E-UTRAN FDD cells.

Table 8.11.1.5-1: Cell specific test parameters for Inter-frequency E-UTRA FDD – E-UTRA FDD and E-UTRA FDD cell search under fading conditions

Parameter	Unit	Cell 1		Cell 2		Cell 3	
		T1	T2	T1	T2	T1	T2
E-UTRA RF Channel Number		1		2		3	
$BW_{channel}$	MHz	10		10		10	
OCNG Patterns defined in D.1.1 (OP.1 FDD) and in D.1.2 (OP.2 FDD)		OP.1 FDD		OP.2 FDD		OP.2 FDD	
PBCH_RA	dB	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						

N_{oc} Note 3	dBm/15 kHz	-98					
RSRP Note 4	dBm/15 kHz	-98.00	-98.00	-Infinity	-94.80	-Infinity	-94.80
$\hat{E}_s/I_{ot}$	dB	0	0	-Infinity	3.20	-Infinity	3.20
SCH_RP Note 4	dBm/15 kHz	-98.00	-98.00	-Infinity	-94.80	-Infinity	-94.80
$\hat{E}_s/N_{oc}$	dB	0	0	-Infinity	3.20	-Infinity	3.20
Propagation Condition		AWGN		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_{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.							

The UE shall send one Event A3 triggered measurement report for cell 2 with a measurement reporting delay less than 7682 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 7682 ms from the beginning of time period T2.

The rate of correct events observed during repeated tests shall be at least 90% with a confidence level of 95%.

The statistical pass/ fail decisions are done separated for cell 2 and cell 3.

Decide the test pass, if events for cell 2 **and** cell 3 are passed, otherwise fail the UE.

The overall delays measured is defined as the time from the beginning of time period T2, to the moment the UE send one Event A3 triggered measurement report to Cell 2.

The overall delays measured test requirement for Event A3 is expressed as:

Overall delays measured = Measurement reporting delay + TTI insertion uncertainty

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.

Measurement reporting delay = $T_{\text{identify\_inter}}$

$$T_{\text{Identify\_Inter}} = T_{\text{Basic\_Identify\_Inter}} \cdot \frac{480}{T_{\text{Inter1}}} \cdot N_{freq} \quad ms$$

Where:

$T_{\text{Basic\_Identify\_Inter}}$ = 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.

T_{inter1}=60ms

N_{freq}=2.

TTI insertion uncertainty = 2 ms

Therefore, the overall delays measured shall be less than a total of 7682ms in this test case (note: this gives a total of 7680 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

8.11.2 E-UTRAN TDD - E-UTRAN TDD and E-UTRAN TDD Inter-frequency event triggered reporting under fading propagation conditions

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined
- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.11.2.1 Test purpose

To verify that the UE makes correct reporting of two event when doing inter frequency measurements.

8.11.2.2 Test applicability

This test applies to all types of E-UTRA TDD UE release 8 and forward. Applicability requires support for FGI bit 25.

8.11.2.3 Minimum conformance requirements

When measurement gaps are scheduled the UE shall be able to identify a new TDD inter-frequency within $T_{Identify\_Inter}$ according to the following expression:

$$T_{Identify\_Inter} = T_{Basic\_Identify\_Inter} \cdot \frac{480}{T_{Inter1}} \cdot N_{freq} \quad ms$$

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 TDD inter-frequency cell is defined.

T_{inter1} is defined in TS 36.133 [4] section 8.1.2.1

N_{freq} is defined in TS 36.133 [4] section 8.1.2.1.1.

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP|$_{dBm}$ and RSRP Ês/Iot according to Annex I.2.3 for a corresponding Band,
- other RSRP related side conditions given in TS 36.133 [4] Section 9.1 are fulfilled,
- SCH_RP|dBm and SCH Ês/Iot according to Annex I.2.3 for a corresponding Band.

When measurement gaps are scheduled for TDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in TS 36.133 [4] sub-clause 9.1.3 with measurement period ($T_{Measurement\_Period\_TDD\_Inter}$) given by table 8.11.2.3-1.

Table 8.11.2.3-1: $T_{Measurement\_Period\_TDD\_Inter}$ 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]
		DL	UL	Normal CP	Extended CP	
0	6	2	2	$19760 \cdot T_s$	$20480 \cdot T_s$	480 x N_{freq}
1 (Note 1)	50	2	2	$19760 \cdot T_s$	$20480 \cdot T_s$	240 x N_{freq}
Note 1: This configuration is optional. Note 2: T_s is defined in 3GPP TS 36.211 [9].						

Where:

T_{inter1} is defined in TS 36.133 [4] section 8.1.2.1

N_{freq} is defined in TS 36.133 [4] section 8.1.2.1.1.

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 inter-frequency cells per TDD inter-frequency and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period $T_{Measurement\_Period\_TDD\_Inter}$.

Reported measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] 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. 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 TS 36.133 [4] clause 8.1.2.3.2.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify\_intra}$ defined in TS 36.133 [4] section 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 ± 50 Ts and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.3.2 and A.8.11.2.

8.11.2.4 Test description

8.11.2.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and AWGN noise source to the UE antenna connectors as shown in TS 36.508 [7] Annex A Figure A.19.

2. The general test parameter settings are set up according to Table 8.11.2.4.1-1.

3. Propagation conditions are set according to Annex B clause B.0.

4. Message contents are as defined in clause 8.11.2.4.3.

5. There are three E-UTRA cells, cell1, cell2 and cell3, all on different frequencies in the test. Cell 1 (EUTRA TDD cell on RF channel number 1) is the cell used for registration with the power level set according to Annex C.0 and C.1 for this test.

Table 8.11.2.4.1-1: General test parameters for E-UTRAN TDD - E-UTRAN TDD and E-UTRAN TDD Inter-frequency event triggered reporting under fading propagation conditions

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 TDD	As specified in section A.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.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 3GPP TS 36.211 section 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
Neighbour 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 3GPP TS 36.133 section 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 3μs or 92*Ts
T1	s	5	
T2	s	10	

8.11.2.4.2 Test procedure

This test scenario comprised of 3 E-UTRA TDD cells operating on different frequency. The test consists of two 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 is used. At T1 the UE is camped on to Cell 1.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table 8.11.2.5-1. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.11.2.5-1.

6. UE shall transmit two MeasurementReport message triggered by two events A3 for cell 2 and cell 3, respectively.

6a. If the overall delay measured from the beginning of the time period T2 is less than 7682 ms for event A3 for cell 2 report then the number of "cell 2 successes" is increased by one.

6b. If the overall delay measured from the beginning of time period T2 is less than 7682ms for event A3 for cell 3 report then the number of "cell 3 successes" is increased by one.

7. After the SS receives the MeasurementReport messages in step 6 or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop. Set Cell 3 physical cell identity = ((current cell 3 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Table G.2.3-1 in Annex G clause G.2 is achieved. The pass/ fail decisions are done separated for procedure steps 6a) and 6b). In general the number of repetitions up to the decision are different for 6a) and 6b). If one of 6a) or 6b) is passed, steps 1-9 are repeated, however the counter for the passed event is not anymore served. If one of 6a) or 6b) is failed, the test can be stopped.

8.11.2.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.11.2.4.3-1: Common Exception messages

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-7

Table 8.11.2.4.3-2: *MeasConfig-DEFAULT*: Additional E-UTRAN TDD-TDD inter frequency event triggered reporting under fading propagation conditions in asynchronous cells test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1 *MeasConfig-DEFAULT*:			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
measObjectToRemoveList	Not present		
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	3 entry		
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f1	f1 is the frequency of the serving cell	
measObject CHOICE {			
MeasObjectEUTRA	MeasObjectEUTRA-GENERIC(f1)	serving frequency	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f2	f2 is the frequency of the neighbouring cell(inter frequency cell)	
measObject CHOICE {			
MeasObjectEUTRA	MeasObjectEUTRA-GENERIC(f2)	inter frequency	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f3	f3 is the frequency of the neighbouring cell(inter frequency cell)	
measObject CHOICE {			
MeasObjectEUTRA	MeasObjectEUTRA-GENERIC(f3)	inter frequency	
}			
}			
}			
reportConfigToRemoveList	Not present		
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId))OF SEQUENCE {	1 entry		
reportConfigId	idReportConfig-A3		
reportConfig	ReportConfigEUTRA-A3		
}			
measIdToRemoveList	Not present		
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) of SEQUENCE {	2 entry		
measIdToAddMod ::= SEQUENCE {			
measId	1		
measObjectId	IdMeasObject-f2		
reportConfigId	idReportConfig-A3		
}			
measIdToAddMod ::= SEQUENCE {			
measId	2		
measObjectId	IdMeasObject-f3		
reportConfigId	idReportConfig-A3		
}			
}			
quantityConfig	QuantityConfig-DEFAULT		
measGapConfig	MeasGapConfig-GP1		
s-Measure	Not present		
preRegistrationInfoHRPD	Not present		
speedStatePars	Not present		

}			

Table 8.11.2.4.3-3: *ReportConfigEUTRA-A3*: Additional E-UTRAN TDD-TDD inter frequency event triggered reporting under fading propagation conditions in asynchronous cells test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12 (-6 dB)	-6 is actual value in dB (-6 * 0.5 dB)	
}			
}			
Hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			

Table 8.11.2.4.3-4: *MeasResults*: Additional E-UTRAN TDD-TDD inter frequency event triggered reporting under fading propagation conditions in asynchronous cells test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.11.2.4.3-5: *MeasResults*: Additional E-UTRAN TDD-TDD inter frequency event triggered reporting under fading propagation conditions in asynchronous cells test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.11.2.4.3-6: *MeasResultListEUTRA*: Additional E-UTRAN TDD-TDD inter frequency event triggered reporting under fading propagation conditions in asynchronous cells test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultEUTRA {			
MeasResultEUTRA ::= SEQUENCE {			
physCellId	PhysicalCellIdentity		
measResult SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
}			

8.11.2.5 Test requirement

Tables 8.11.2.4.1-1 and 8.11.2.5-1 define the primary level settings including test tolerances for three E-UTRAN TDD cells.

Table 8.11.2.5-1: Cell specific test parameters for E-UTRAN TDD - E-UTRAN TDD and E-UTRAN TDD Inter-frequency event triggered reporting under fading propagation conditions cells

Parameter	Unit	Cell 1		Cell 2		Cell 3	
		T1	T2	T1	T2	T1	T2
E-UTRA RF Channel Number		1		2		3	
$BW_{channel}$	MHz	10		10		10	
OCNG Patterns defined in D.2.1 (OP.1 TDD) and in D.2.2 (OP.2 TDD)		OP.1 TDD		OP.2 TDD		OP.2 TDD	
PBCH_RA	dB	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						
N_{oc} Note 3	dBm/15 kHz	-98					
RSRP Note 4	dBm/15 kHz	-98.00	-98.00	-infinity	-94.80	-infinity	-94.80
$\hat{E}_s/I_{ot}$	dB	0	0	-infinity	3.20	-infinity	3.20
SCH_RP Note 4	dBm/15 kHz	-98.00	-98.00	-infinity	-94.80	-infinity	-94.80
$\hat{E}_s/N_{oc}$	dB	0	0	-infinity	3.20	-infinity	3.20
Propagation Condition		AWGN		ETU70		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: 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.							

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.

The overall delays measured test requirement for Event A3 is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify\_inter}$

$$T_{Identify\_Inter} = T_{Basic\_Identify\_Inter} \cdot \frac{480}{T_{Inter1}} \cdot N_{freq} \quad ms$$

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 TDD inter-frequency cell is defined.

T_{inter1}=60ms

N_{freq}=2.

TTI insertion uncertainty = 2 ms

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 7682ms from the beginning of time period T2 (note: this gives a total of 7680 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

The rate of correct events observed during repeated tests shall be at least 90% with a confidence level of 95%.

The statistical pass/ fail decisions are done separated for cell 2 and cell 3.

Decide the test pass, if the events for cell 2 and cell 3 are passed, otherwise fail the UE.

8.11.3 E-UTRAN FDD-FDD Inter-frequency and UTRAN FDD event triggered reporting under fading propagation conditions

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined
- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.11.3.1 Test purpose

To verify that the UE makes correct reporting of an event when doing inter frequency and UTRAN FDD measurements under fading propagation conditions.

8.11.3.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 8 and forward. Applicability requires support for FGI bits 22, and 25.

8.11.3.3 Minimum conformance requirements

When measurement gaps are scheduled the UE shall be able to identify a new detectable FDD inter-frequency cell within $T_{Identify\_Inter}$ according to the following expression:

$$T_{Identify\_Inter} = T_{Basic\_Identify\_Inter} \cdot \frac{480}{T_{Inter1}} \cdot N_{freq} \quad ms$$

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_{freq} is defined in section 8.1.2.1.1 and T_{inter1} is defined in section 8.1.2.1

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP and RSRP Ês/Iot according to Annex I.2.3 for a corresponding Band,
- other RSRP related side conditions given in Section 9.1 are fulfilled,
- SCH_RP$|_{dBm}$ and SCH Ês/Iot according to Annex I.2.3 for a corresponding Band.

When measurement gaps are scheduled for FDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in sub-clause 9.1.3 with measurement period given by Table 8.11.3.3-1.

Table 8.11.3.3-1: RSRP measurement period and measurement bandwidth

Configuration	Physical Layer Measurement period: $T_{Measurement\_Period\_Inter\_FDD}$ [ms]	Measurement bandwidth [RB]
0	480 x N_{freq}	6
1 (Note)	240 x N_{freq}	50
Note: This configuration is optional		

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 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 8.11.3.3-1.

Reported measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] 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 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 TS 36.133 [4] clause 8.1.2.3.1.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period Tidentify_intra defined in TS 36.133 [4] section 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 TMeasurement_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 an additional delay can be expected.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.3.1 and A.8.11.3.

When explicit neighbour list is provided and no DRX is used the UE shall be able to identify a new detectable FDD UTRA cell belonging to the monitored set within.

$$\mathrm{T_{identify,\ UTRA\_FDD}} = \mathrm{T_{basic\_identify\_UTRA\_FDD}} \cdot \frac{480}{\mathrm{T_{inter1}}} \cdot N_{Freq} \quad ms$$

A cell shall be considered detectable when

- CPICH Ec/Io $\geq$ -20 dB,

- SCH_Ec/Io $\geq$ -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.

When measurement gaps are scheduled for UTRA FDD inter RAT measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in TS 36.133 [4] section 9.2 with measurement period given by

$$T_{\text{measurement \_UTRA\_FDD}} = Max\left\{T_{\text{Measurement\_Period UTRA\_FDD}}, T_{\text{basic\_measurement\_UTRA\_FDD}} \cdot \frac{480}{T_{\text{inter1}}} \cdot N_{Freq}\right\} ms$$

If the UE does not need measurement gaps to perform UTRA FDD measurements, the measurement period for UTRA FDD measurements is 480 ms.

The UE shall be capable of performing UTRA FDD CPICH measurements for $X_{\text{basic measurementUTRA\_FDD}}$ 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 $T_{\text{Measurement\_UTRA\_FDD}}$.

$X_{\text{basic measurement UTRA\_FDD}} = 6$

$T_{\text{Measurement\_Period UTRA\_FDD}}$ = 480 ms. The period used for calculating the measurement period $T_{\text{measurement\_UTRA\_FDD}}$ for UTRA FDD CPICH measurements.

$T_{\text{basic\_identify\_UTRA\_FDD}}$ = 300 ms. This is the time period used in the inter RAT equation in TS 36.133 [4] section 8.1.2.4.1.1.1 where the maximum allowed time for the UE to identify a new UTRA FDD cell is defined.

$T_{\text{basic\_identify\_enhanced\_UTRA\_FDD}}$ = 60 ms. This is the time period used in the inter RAT equation in section 8.1.2.4.1.1.1a where the maximum allowed time for the UE to identify a new UTRA FDD cell is defined.

$T_{\text{basic\_measurement\_UTRA\_FDD}}$ = 50 ms. This is the time period used in the equation for defining the measurement period for inter RAT CPICH measurements.

N_{freq} is defined in TS 36.133 [4] section 8.1.2.1.1 and T_{inter1} is defined in TS 36.133 [4] section 8.1.2.1

Reported measurements in periodically triggered measurement reports shall meet the requirements in TS 36.133 [4] section 9.

Reported measurements in event triggered measurement reports shall meet the requirements in TS 36.133 [4] section 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 $T_{\text{identify, UTRA\_FDD}}$ defined in TS 36.133 [4]section 8.1.2.4.1.1.1 for the minimum requirements or $T_{\text{identify, enhanced\_UTRA\_FDD}}$ defined in TS 36.133 [4] section 8.1.2.4.1.1.1a for the enhanced requirements When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{\text{identify,UTRA\_FDD}}$ defined in TS 36.133 [4] section 8.1.2.4.1.1.1 for the minimum requirements or $T_{\text{identify, enhanced\_UTRA\_FDD}}$ defined in TS 36.133 [4] section 8.1.2.4.1.1.1a for the enhanced requirements and then enters or leaves the reporting range, the event triggered measurement reporting delay shall be less than $T_{\text{measurement\_UTRA\_FDD}}$ defined in TS 36.133 [4] section 8.1.2.4.1.1.2 provided the timing to that cell has not changed more than ± 32 chips while measurement gap has not been available and the L3 filter has not been used. When L3 filtering is used an additional delay can be expected.

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in TS 36.133 [4] section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in TS 36.133 [4] section 8.1.2.4.1.1.4 Event Triggered Reporting.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.4.1 and A.8.11.3.

8.11.3.4 Test description

8.11.3.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and AWGN noise source to the UE antenna connectors as shown in TS 36.508 [7] Annex A Figure A.24.
2. The general test parameter settings are set up according to Table 8.11.3.4.1-1.
3. Propagation conditions are set according to Annex B clause B.0.
4. Message contents are as defined in clause 8.11.3.4.3.
5. In this test, there are two cells on different carrier frequencies and one cell on UTRAN carrier frequency. Cell 1 (EUTRA FDD cell on RF channel number 1) is the cell used for registration with the power level set according to Annex C.0 and C.1 for this test.

Table 8.11.3.4.1-1: 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 section A.1.1
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in section A.2.1
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 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 quantity		RSRP	
Inter-RAT (UTRA FDD) measurement quantity		CPICH Ec/N0	
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	

8.11.3.4.2 Test procedure

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. At T1 the UE is camped on to Cell 1.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

2. Set the parameters according to T1 in Table 8.11.3.5-1. T1 starts.

3. SS shall transmit an RRCConnectionReconfiguration message.

4. The UE shall transmit RRCConnectionReconfigurationComplete message.

5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.11.3.5-1.

6. UE shall transmit MeasurementReport messages triggered by event A3 and B2.

6a. If the measurement reporting delay for event A3 from the beginning of the time period T2 is less than 7682 ms the number of “A3 successes” is increased by one.

6b. If the measurement reporting delay for event B2 from the beginning of time period T2 is less than 4802 ms the number of “B2 successes” is increased by one.

7. After the SS receives the MeasurementReport messages in step 6 or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop. Set Cell 3 primary scrambling code = ((current cell 3 primary scrambling code - 50) mod 200 + 100) for the next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
   - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
   or
   - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Table G.2.3-1 in Annex G clause G.2 is achieved. The pass/ fail decisions are done separated for procedure steps 6a) and 6b). In general the number of repetitions up to the decision are different for 6a) and 6b). If one of 6a) or 6b) is passed, steps 1-8 are repeated, however the counter for the passed event is not anymore served. If one of 6a) or 6b) is failed, the test can be stopped.

8.11.3.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.11.3.4.3-1: Common Exception messages

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-7

Table 8.11.3.4.3-2: *MeasConfig-DEFAULT*: Additional E-UTRAN FDD-FDD Inter-frequency and UTRAN FDD event triggered reporting under fading propagation conditions

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1 *MeasConfig-DEFAULT*:			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
measObjectToRemoveList	Not present		
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	3 entry		
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f1	f1 is the frequency of the serving cell (E-UTRA serving cell)	
measObject CHOICE {			
MeasObjectEUTRA	MeasObjectEUTRA-GENERIC(f1)	serving frequency	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f2	f2 is the frequency of the neighbouring cell(E-UTRA inter frequency cell)	
measObject CHOICE {			
MeasObjectEUTRA	MeasObjectEUTRA-GENERIC(f2)	inter frequency	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f3	f3 is the frequency of the neighbouring cell(UTRA cell)	
measObject CHOICE {			
MeasObjectUTRA	MeasObjectUTRA-GENERIC(f3)	inter frequency	
}			
}			
}			
reportConfigToRemoveList	Not present		
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId))OF SEQUENCE {	2 entry		
reportConfigToAddMod ::= SEQUENCE {			
reportConfigId	idReportConfig-A3		
reportConfig	ReportConfigEUTRA-A3		
}			
eportConfigToAddMod ::= SEQUENCE {			
reportConfigId	idReportConfig-B2		
reportConfig	ReportConfigInterRAT-B2-UTRA		
}			
}			
measIdToRemoveList	Not present		
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) of SEQUENCE {	2 entry		
measIdToAddMod ::= SEQUENCE {			
measId	1		
measObjectId	IdMeasObject-f2		
reportConfigId	idReportConfig-A3		
}			
measIdToAddMod ::= SEQUENCE {			
measId	2		
measObjectId	IdMeasObject-f3		
reportConfigId	idReportConfig-B2		

}			
}			
quantityConfig	QuantityConfig-DEFAULT		
measGapConfig	MeasGapConfig-GP1		
s-Measure	Not present		
preRegistrationInfoHRPD	Not present		
speedStatePars	Not present		
}			

Table 8.11.3.4.3-3: *ReportConfigEUTRA-A3*: Additional E-UTRAN FDD-FDD Inter-frequency and UTRAN FDD event triggered reporting under fading propagation conditions

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12 (-6 dB)	-6 is actual value in dB (-6 * 0.5 dB)	
}			
}			
Hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			

Table 8.11.3.4.3-4: *ReportConfigInterRAT-B2-UTRA*: Additional E-UTRAN FDD-FDD Inter-frequency and UTRAN FDD event triggered reporting under fading propagation conditions

Derivation Path: 36.508 clause 4.6.6 Table 4.6.6-7B			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B2-UTRA(UTRA-Thres) ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventB2 SEQUENCE {			
b2-Threshold1 CHOICE {			
threshold-RSRP	55(-86dBm)	INTEGER(0..97), the mapping table is Table 9.1.4-1 in [36.133]	
b2-Threshold2 CHOICE {			
B2-Threshold-UTRA CHOICE {			
thresholdUTRA- EcN0	13 (-18dBm)	UTRA-Thres is actual CPICH Ec/N0 value in dBm	UTRA-FDD
}			
}			
}			
}			
Hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	ms0	Value range FFS	
}			
}			
}			

Table 8.11.3.4.3-5 *MeasResults*: Additional E-UTRAN FDD-FDD Inter-frequency and UTRAN FDD event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	[1]		
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.11.3.4.3-6: *MeasResultListEUTRA*: Additional E-UTRAN FDD-FDD Inter-frequency and UTRAN FDD event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultEUTRA {			
MeasResultEUTRA ::= SEQUENCE {			
physCellId	PhysicalCellIdentity		
measResult SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
}			

Table 8.11.3.4.3-7: *MeasuredResults*: Additional E-UTRAN FDD-FDD Inter-frequency and UTRAN FDD event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	[2]		
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListUTRA	MeasResultListUTRA		
}			
}			

Table 8.11.3.4.3-8: *MeasResultListUTRA*: Additional E-UTRAN FDD-FDD Inter-frequency and UTRAN FDD event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId CHOICE {			
fdd	PhysCellIdUTRA-FDD	INTEGER (0..127)	
}			
measResult SEQUENCE {			
utra- EcN0		Set according to specific test INTEGER (-5..91)	
}			
}			

8.11.3.5 Test requirement

Table 8.11.3.5-1 and 8.11.3.5-2 define the primary level settings including test tolerances for two E-UTRAN FDD cells and one UTRAN FDD cell.

Table 8.11.3.5-1: Cell specific test parameters for Combined inter-frequency and UTRAN event triggered reporting in fading propagation conditions

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
E-UTRA RF Channel Number		1		2	
$BW_{channel}$	MHz	10		10	
OCNG Patterns defined in D.1.1 (OP.1 FDD) and in D1.2 (OP.2 FDD)		OP.1 FDD		OP.2 FDD	
PBCH_RA	dB	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				

N_{oc} Note 3	dBm/15 kHz	-98			
RSRP Note 4	dBm/15 kHz	-94.8	-94.8	-Infinity	-91.0
$\hat{E}_s/I_{ot}$	dB	3.2	3.2	-Infinity	7.0
SCH_RP Note 4	dBm/15 kHz	-94.8	-94.8	-Infinity	-91.0
$\hat{E}_s/N_{oc}$	dB	3.2	3.2	-Infinity	7.0
Propagation Condition		AWGN		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 fulfilled. Note 4: RSRP and SCH_RP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.					

Table 8.11.3.5-2: 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	
		T1	T2
UTRA RF Channel Number		1	
CPICH_Ec/Ior	dB	-10	
PCCPCH_Ec/Ior	dB	-12	
SCH_Ec/Ior	dB	-12	
PICH_Ec/Ior	dB	-15	
DPCH_Ec/Ior	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}. Note 3: Case 5 propagation conditions are defined in Annex A of 3GPP TS 25.101.			

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 7682ms from the beginning of time period T2.

The UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than 4802 ms from the beginning of time period T2.

The rate of correct events observed during repeated tests shall be at least 90% with a confidence level of 95%.

The statistical pass/ fail decisions are done separated for event A3 and event B2.

Decide the test pass, if events A3 and B2 are passed, otherwise fail the UE.

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.

The overall delays measured test requirement for Event A3 is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify\_inter}$

$$T_{Identify\_Inter} = T_{Basic\_Identify\_Inter} \cdot \frac{480}{T_{Inter1}} \cdot N_{freq} \quad ms$$

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.

T_{inter1}=60ms

N_{freq}=2.

TTI insertion uncertainty = 2 ms

Therefore, the overall delays of Event A3 triggered measurement report measured shall be less than a total of 7682ms in this test case (note: this gives a total of 7680 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

Similarly, the overall delays measured test requirement for Event B2 is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify, UTRA\_FDD}$

$$T_{identify, UTRA\_FDD} = T_{basic\_identify\_UTRA\_FDD} \cdot \frac{480}{T_{inter1}} \cdot N_{Freq} \quad ms$$

$T_{basic\_identify\_UTRA\_FDD}$ = 300 ms

T_{Inter1} = 30 ms

N_{Freq} = 1

TTI insertion uncertainty = 2 ms

Therefore, the overall delays of Event B2 triggered measurement report measured shall be less than a total of 4802 ms in this test case (note: this gives a total of 4800 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

8.11.4 InterRAT E-UTRA TDD to E-UTRA TDD and UTRA TDD cell search

Editor's note: This Test case is incomplete for frequencies above 3GHz

- The Test system uncertainties applicable above 3GHz are undefined
- The Test Tolerances and Test Requirements applicable above 3GHz are undefined

8.11.4.1 Test purpose

To verify that the UE makes correct reporting of an event when doing inter frequency measurements and UTRA TDD measurements.

8.11.4.2 Test applicability

This test applies to all types of E-UTRA TDD UE release 8 and forward that support UTRA TDD. Applicability requires support for FGI bits 22, and 25.

8.11.4.3 Minimum conformance requirements

When measurement gaps are scheduled the UE shall be able to identify a new TDD inter-frequency within $T_{Identify\_Inter}$ according to the following expression:

$$\mathrm{T}_{\mathrm{Identify\_Inter}} = \mathrm{T}_{\mathrm{Basic\_Identify\_Inter}} \cdot \frac{480}{\mathrm{T}_{\mathrm{Inter1}}} \cdot N_{freq} \quad ms$$

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 TDD inter-frequency cell is defined.

T_{inter1} is defined in TS 36.133 [4] section 8.1.2.1

N_{freq} is defined in TS 36.133 [4] section 8.1.2.1.1.

A cell shall be considered detectable provided following conditions are fulfilled:

- $RSRP|_{dBm}$ and RSRP Ês/Iot according to Annex I.2.3 for a corresponding Band,
- other RSRP related side conditions given in TS 36.133 [4] Section 9.1 are fulfilled
- $SCH\_RP|_{dBm}$ and SCH Ês/Iot according to Annex I.2.3 for a corresponding Band.

When measurement gaps are scheduled for TDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in TS 36.133 sub-clause 9.1.3 with measurement period ($T_{Measurement\_Period\_TDD\_Inter}$) given by table 8.11.4.3-1.

Table 8. 11.4.3-1: $T_{Measurement\_Period\_TDD\_Inter}$ 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]
		DL	UL	Normal CP	Extended CP	
0	6	2	2	$19760 \cdot T_s$	$20480 \cdot T_s$	480 x N_{freq}
1 (Note 1)	50	2	2	$19760 \cdot T_s$	$20480 \cdot T_s$	240 x N_{freq}
Note 1: This configuration is optional. Note 2: T_s is defined in 3GPP TS 36.211 [9].						

Where:

T_{inter1} is defined in TS 36.133 [4] section 8.1.2.1

N_{freq} is defined in TS 36.133 [4] section 8.1.2.1.1.

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 inter-frequency cells per TDD inter-frequency and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period $T_{Measurement\_Period\_TDD\_Inter.}$

Reported measurements contained in event triggered measurement reports shall meet the requirements in TS 36.133 [4] 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. 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 TS 36.133 [4] clause 8.1.2.3.2.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify\_intra}$ defined in TS 36.133 [4] section 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 an additional delay can be expected

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.3.2.

The measurement reporting delay shall be less than $T_{identify, UTRA\_TDD}$ in RRC_CONNECTED state.

When explicit neighbour list is provided and no DRX is used the UE shall be able to identify a new detectable cell belonging to the monitored set within

$$T_{identify,\ UTRA\_TDD} = Max\left\{5000, T_{basic\,identify\,UTRA\_TDD} \cdot \frac{480}{T_{inter1}} \cdot N_{Freq}\right\} ms$$

If the UE does not require transmit gap to perform inter-RAT UTRA TDD measurements, the UE shall be able to identify a new detectable inter-RAT UTRA TDD cell belonging to the monitored set within 5000 ms.

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.

When transmission gaps are scheduled for UTRA TDD inter RAT measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in TS 36.133 [4] clause 9.3 with measurement period given by

$$T_{measurement\ \ UTRA\_TDD} = Max\left\{T_{Measurement\_Period\ \ UTRA\_TDD}, T_{basic\,measurement\,UTRA\_TDD} \cdot \frac{480}{T_{inter1}} \cdot N_{Freq}\right\} ms$$

If the UE does not need measurement gaps to perform UTRA TDD measurements, the measurement period for UTRA TDD measurements is 480 ms.

The UE shall be capable of performing UTRA TDD P-CCPCH RSCP measurements for $X_{basic\ measurementUTRA\_TDD}$ inter-frequency 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 $T_{Measurement\_UTRA\_TDD}$.

$X_{basic\ measurement\ TDDinter}$ = 6

$T_{Measurement\_Period\ UTRA\_TDD}$ = 480 ms is the period used for calculating the measurement period $T_{measurement\_UTRA\_TDD}$ for UTRA TDD P-CCPCH RSCP measurements.

$T_{basic\_identify\_UTRA\_TDD}$ = 800 ms is the time period used in the inter RAT equation 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_{freq} and T_{inter1} are defined in TS 36.133 [4] section 8.1.2.1.1

Reported measurements in periodically triggered measurement reports shall meet the requirements in TS 36.133 [4] section 9.

Reported measurements in event triggered measurement reports shall meet the requirements in TS 36.133 [4] section 9.

The UE shall not send any event triggered measurement reports, as long as the reporting criteria are not fulfilled.

The measurement reporting delay is defined as the time between any events 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 TS 36.133 [4] Section 8.1.2.4.3.1.1 When L3 filtering is used an additional delay can be expected.

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in TS 36.133 [4] section 9.

The first report in event triggered periodic measurement reporting shall meet the requirements specified in TS 36.133 [4] section 8.1.2.4.3.1.4 Event Triggered Reporting.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.4.3.

8.11.4.4 Test description

8.11.4.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator) and AWGN noise source to the UE antenna connectors as shown in TS 36.508 [7] Annex A Figure A.24.
2. The general test parameter settings are set up according to Table 8.11.4.4.1-1.
3. Propagation conditions are set according to Annex B clause B.0.
4. Message contents are as defined in clause 8.11.4.4.3.
5. There are two E-UTRA TDD cells operating on different frequency and one UTRA TDD cell specified in the test. Cell 1 (EUTRA TDD cell on RF channel number 1) is the cell used for registration with the power level set according to Annex C.0 and C.1 for this test.

Table 8.11.4.4.1-1: 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 Measurement Channel R.0 TDD	As specified in section A.1.2
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 TDD	As specified in section A.2.2
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 of cell1 and cell2		1	As specified in Table 4.2-2 in TS 36.211. The same configuration in both cells
Special subframe configuration of cell1 and cell2		6	As specified in table 4.2-1 in TS 36.211. The same configuration in both cells
Gap Pattern Id		0	As specified in 3GPP TS 36.133 section 8.1.2.1.
E-UTRAN TDD measurement quantity		RSRP	
UTRAN TDD measurement quantity		RSCP	
DRX		OFF	
Ofn	dB	0	Parameter for A3 and B2 event
Ocn	dB	0	Parameter for A3 event
Hys	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
Hysteresis	dB	0	
TimeToTrigger	dB	0	
Filter coefficient		0	L3 filtering is not used
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 scrambling code of cell 3 shall be changed.
T2	s	15	

8.11.4.4.2 Test procedure

This test scenario comprised of 2 E-UTRA TDD cells operating on different frequency, and 1 UTRA TDD cell. 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. At T1 the UE is camped on to Cell 1.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
2. Set the parameters according to T1 in Table 8.11.4.5-1and Table 8.11.4.5-2. T1 starts.
3. SS shall transmit an RRCConnectionReconfiguration message.
4. The UE shall transmit RRCConnectionReconfigurationComplete message.
5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.11.4.5-1and Table 8.11.4.5-2.
6. UE shall transmit a MeasurementReport message triggered by event A3 and B2.

6a. If the overall delays measured from the beginning of time period T2 is less than 7760 ms for event A3 report then the number of “A3 successes” is increased by one.

6b. If the overall delay measured from the beginning of time period T2 is less than 12.88s for event B2 report then the number of “B2 successes” is increased by one.

7. After the SS receives the MeasurementReport messages in step 6 or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop. Set Cell 3 cell parameter id = (current Cell 3 cell parameter id+4) mod 16 for the next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
- transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
or
- switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Table G.2.3-1 in Annex G clause G.2 is achieved. The pass/ fail decisions are done separated for procedure steps 6a) and 6b). In general the number of repetitions up to the decision are different for 6a) and 6b). If one of 6a) or 6b) is passed, steps 1-9 are repeated, however the counter for the passed event is not anymore served. If one of 6a) or 6b) is failed, the test can be stopped.

8.11.4.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.11.4.4.3-1: Common Exception messages

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-7

Table 8.11.4.4.3-2: *MeasConfig-DEFAULT*: Additional E-UTRAN TDD-TDD inter frequency event triggered reporting under fading propagation conditions in asynchronous cells test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1 MeasConfig-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
measObjectToRemoveList	Not present		
measObjectToAddModList	Not present		
reportConfigToRemoveList	Not present		
reportConfigToAddModList	ReportConfigEUTRA-A3 ReportConfigInterRAT-B2-UTRA		
measIdToRemoveList	Not present		
measIdToAddModList	Not present		
quantityConfig	QuantityConfig-DEFAULT		
measGapConfig	MeasGapConfig-GP1		
s-Measure	Not present		
preRegistrationInfoHRPD	Not present		
speedStatePars	Not present		
}			

Table 8.11.4.4.3-3: *ReportConfigEUTRA-A3*: Additional E-UTRAN TDD-TDD inter frequency event triggered reporting under fading propagation conditions in asynchronous cells test requirement

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12 (-6 dB)	-6 is actual value in dB (-6 * 0.5 dB)	
}			
}			
Hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			

Table 8.11.4.4.3-4: *ReportConfigInterRAT-B2-UTRA*: Additional E-UTRAN TDD - UTRAN TDD event triggered reporting under fading propagation conditions

Derivation Path: 36.508 clause 4.6.6 Table 4.6.6-7B			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B2-UTRA(UTRA-Thres) ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventB2 SEQUENCE {			
b2-Threshold1 CHOICE {			
threshold-RSRP	55(-86dBm)	INTEGER(0..97), the mapping table is Table 9.1.4-1 in [36.133]	
b2-Threshold2 CHOICE {			
B2-Threshold-UTRA CHOICE {			
thresholdUTRA-RSCP	31(UTRA-Thres + 115)	UTRA-Thres is actual RSCP value in dBm	UTRA-TDD
}			
}			
}			
}			
Hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	ms0	Value range FFS	
}			
}			
}			

Table 8.11.4.4.3-5: *MeasResults*: Additional E-UTRAN TDD-TDD inter frequency event triggered reporting under fading propagation conditions in asynchronous cells test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	[1]		
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.11.4.4.3-6: *MeasResultListEUTRA*: Additional E-UTRAN TDD-TDD inter frequency event triggered reporting under fading propagation conditions in asynchronous cells test requirement

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultEUTRA {			
MeasResultEUTRA ::= SEQUENCE {			
physCellId	PhysicalCellIdentity		
cgi-Info SEQUENCE {			
cellglobalId-EUTRA	GlobalCellId-EUTRA		
tac-IDrackingAreaCode	TrackingAreaCode		
plmn-IdentityList	Not present		
}			
measResult SEQUENCE {			
rsrpResult	Not present		
rsrqResult	Not present		
}			
}			

Table 8.11.4.4.3-7: *MeasuredResults*: Additional E-UTRAN TDD - UTRAN TDD event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	[2]		
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListUTRA	MeasResultListUTRA		
}			
}			

Table 8.11.4.4.3-8: *MeasResultListUTRA*: Additional E-UTRAN TDD - UTRAN TDD event triggered reporting under fading propagation conditions

Derivation Path: 36.331 clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId CHOICE {			
tdd	PhysCellIdUTRA-TDD	INTEGER (0..127)	
}			
cgi-Info SEQUENCE {			
cellGlobalId	CellGlobalIdUTRA		
locationAreaCode	Not present		
routingAreaCode	Not present		
plmn-IdentityList	Not present		
}			
measResult SEQUENCE {			
utra-RSRP		Set according to specific test INTEGER (-5..91)	
}			
}			

8.11.4.5 Test requirement

Tables 8.11.4.5-1 and 8.11.4.5-2 define the primary level settings including test tolerances for two E-UTRAN TDD cells and one UTRAN FDD cell.

Table 8.11.4.5-1: 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	Cell 1		Cell 2	
		T1	T2	T1	T2
E-UTRA RF Channel Number		1		2	
BWchannel	MHz	10		10	
OCNG Pattern defined in D.2.1 (OP.1 TDD) and in D.2.2 (OP.2 TDD)		OP.1 TDD		OP.2 TDD	
PBCH_RA	dB	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_RANote 1	dB				
OCNG_RBNote 1	dB				
$\hat{E}_s/I_{ot}$	dB	3.2	3.2	-Infinity	7.0
$\hat{E}_s/N_{oc}$	dB	3.2	3.2	-Infinity	7.0
N_{oc}	dBm/15 kHz	-98			
RSRP	dBm/15 kHz	-94.8	-94.8	-Infinity	-91.0
SCH_RP	dBm/15 kHz	-94.8	-94.8	-infinity	-91.0
Propagation Condition		AWGN		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 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 8.11.4.5-2: 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 Number*		Channel 3			
PCCPCH_Ec/Ior	dB	-3			
DwPCH_Ec/Ior	dB			0	
OCNS_Ec/Ior	dB	-3			
$\hat{I}_{or}/I_{oc}$	dB	-Infinity	9.0	-Infinity	9.0
I_{oc}	dBm/1.28 MHz	-80.4			
PCCPCH RSCP	dBm	-Infinity	-74.4	n.a.	
Propagation Condition		Case 3			
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.					

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.

The overall delays measured test requirement for Event A3 is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify\_inter}$

$$T_{Identify\_Inter} = T_{Basic\_Identify\_Inter} \cdot \frac{480}{T_{Inter1}} \cdot N_{freq} \quad ms$$

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 TDD inter-frequency cell is defined.

T_{inter1}=60ms

N_{freq}=2.

TTI insertion uncertainty = 2 ms

The UE shall send one Event A3 triggered measurement report, with a measurement reporting delay less than 7682ms from the beginning of time period T2 (note: this gives a total of 7680 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

Similarly, the overall delays measured test requirement for Event B2 is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify,UTRA\_TDD}$

$$T_{identify,\ UTRA\_TDD} = Max\left\{5000, T_{basic\ identify\ UTRA\_TDD} \cdot \frac{480}{T_{inter1}} \cdot N_{Freq}\right\} ms$$

Where:

$T_{basic\_identify\_UTRA\_TDD}$ = 800 ms is the time period used in the inter RAT equation 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.

T_{inter1}=60ms

N_{freq}=2.

TTI insertion uncertainty = 2 ms

The UE shall send one Event B2 triggered measurement report, with a measurement reporting delay less than 1202m8s from the beginning of time period T2 (note: this gives a total of 12.8 s for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

The rate of correct events observed during repeated tests shall be at least 90% with a confidence level of 95%.

The statistical pass/ fail decisions are done separated for event A3 and event B2.

Decide the test pass, if events A3 **and** B2 are passed, otherwise fail the UE.

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

8.11.5.1 Test purpose

The purpose of this test is to verify that the UE makes correct reporting of multiple events when doing inter frequency and GSM measurements.

8.11.5.2 Test applicability

This test applies to all types of E-UTRA FDD UE release 9 and forward that support GSM. Applicability requires support for FGI bit 23, and 25.

8.11.5.3 Minimum conformance requirements

E-UTRAN part:

When measurement gaps are scheduled the UE shall be able to identify a new FDD inter-frequency within $T_{Identify\_Inter}$ according to the following expression:

$$T_{Identify\_Inter} = T_{Basic\_Identify\_Inter} \cdot \frac{480}{T_{Inter1}} \cdot N_{freq} \quad ms$$

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_{freq} is defined in TS 36.133 [4] section 8.1.2.1.1 and T_{inter1} is defined in TS 36.133 [4] section 8.1.2.1

A cell shall be considered detectable provided following conditions are fulfilled:

- $RSRP|_{dBm}$ and RSRP Ês/Iot according to Annex I.2.3 for a corresponding Band,
- other RSRP related side conditions given in TS 36.133 [4] Section 9.1 are fulfilled,
- $SCH\_RP|_{dBm}$ and SCH Ês/Iot according to Annex I.2.3 for a corresponding Band.

When measurement gaps are scheduled for FDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in TS36.133 [4] sub-clause 9.1.3 with measurement period given by table 8.11.5.3-1.

Table 8.11.5.3-1: RSRP measurement period and measurement bandwidth

Configuration	Physical Layer Measurement period: $T_{Measurement\_Period\_Inter\_FDD}$ [ms]	Measurement bandwidth [RB]
0	480 x N_{freq}	6
1 (Note)	240 x N_{freq}	50
Note: This configuration is optional		

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 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 8.11.5.3-1.

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in TS36.133 [4] 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 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 $T_{identify\text{-}inter}$ defined in TS36.133 [4] section 8.1.2.3.1.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify\_inter}$ defined in TS36.133 [4] section 8.1.2.3.1.1 and then triggers the measurement report as per TS 36.331 [5], the event triggered measurement reporting delay shall be less than $T_{Measurement\_Period\_Inter\_FDD}$ defined in TS36.133 [4] section 8.1.2.3.1.1 provided the timing to that cell has not changed more than ± 50 Ts while measurement gap has not been available and the L3 filter has not been used.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.3.1.

GSM part:

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 in TS 36.133 [4] is configured by E-UTRAN 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.

This measurement shall be based on measurement gaps allocated for GSM carrier RSSI measurement as described in section 8.1.2.1 in TS 36.133 [4] 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 N_{freq} * 480 ms. The parameter N_{freq} is defined in clause 8.1.2.1.1 of TS 36.133 [4] as:

$$N_{freq} = N_{freq,\ E\text{-}UTRA} + N_{freq,\ UTRA} + M_{gsm} + N_{freq,\ cdma2000} + N_{freq,\ HRPD}$$

Where:

$N_{freq,\ E\text{-}UTRA}$ is the number of E-UTRA carriers being monitored

$N_{freq,\ UTRA}$ is the number of UTRA carriers being monitored

$N_{freq,\ cdma2000}$ is the number of cdma2000 carriers being monitored

$N_{freq,\ HRPD}$ is the number of HRPD carriers being monitored

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 Measurement Gap Repetition Period (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

The UE shall meet the measurement accuracy requirements stated for RXLEV in TS 45.008 [15], 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.

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 section 8.1.2.4.5.1.2.1 of TS 36.133 [4].

- **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 section 8.1.2.4.5.1.2.2 of TS 36.133 [4].

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 section 8.1.2.4.5.1 in TS 36.133 [4] when a measurement gap pattern sequence is activated.
- The UE shall perform measurement reporting as defined in TS 36.331 [5].
- The UE shall perform BSIC identification if BSIC verified measurements are activated by RRC. 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 [5].

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 $8*T_{re\text{-}confirm,GSM}$ 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.

$T_{re\text{-}confirm,GSM}$ 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 of TS 36.133 [4].

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005 [16].

This measurement shall be based on the measurement gaps used for Initial BSIC identification as described in section 8.1.2.4.5.1.2 of TS 36.133 [4].

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 of TS 36.133 [4]. The requirements in the table represent the time required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier.

Reported measurements in event triggered measurement reports shall meet the requirements in section TS 36.331 [5].

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.

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 section 8.1.2.4.5.1 of TS 36.133 [4]).

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 section 8.1.2.4.5.1. of TS 36.133 [4] When L3 filtering is used an additional delay can be expected.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.3.1, 8.1.2.4.5 and A.8.11.5

8.11.5.4 Test description

8.11.5.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator), AWGN noise source and Fader to the UE antenna connectors as shown in TS 36.508 [7] Annex A Figure A.25.

2. The general test parameter settings are set up according to Table 8.11.5.4.1-1.

3. Propagation conditions are set according to Annex B clause B.0.

4. Message contents are as defined in clause 8.11.5.4.3.

5. There are two E-UTRA FDD cells operating on different frequency and one GSM cell specified in the test. Cell 1 (EUTRA FDD cell on RF channel number 1) is the cell used for registration with the power level set according to Annex C.0 and C.1 for this test.

Table 8.11.5.4.1-1: 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-UTRAN FDD)		DL Reference Measurement Channel R.0 FDD	As specified in section A.1.1
PCFICH/PDCCH/PHICH parameters (E-UTRAN FDD)		DL Reference Measurement Channel R.6 FDD	As specified in section A.2.1
Gap Pattern Id		0	As specified in 3GPP TS 36.133 [4] section 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 quantity		RSRP	
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) measurement quantity		GSM Carrier RSSI	
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	

8.11.5.4.2 Test procedure

This test scenario comprised of 2 E-UTRA FDD cells operating on different frequency, and 1 GSM cell. 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. At T1 the UE is camped on to Cell 1.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
2. Set the parameters according to T1 in Table 8.11.5.5-1and Table 8.11.5.5-2. T1 starts.
3. SS shall transmit an RRCConnectionReconfiguration message.
4. The UE shall transmit RRCConnectionReconfigurationComplete message.
5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.11.5.5-1and Table 8.11.5.5-2.
6. UE shall transmit a MeasurementReport message triggered by event A3 and B2.

6a. If the overall delays measured from the beginning of time period T2 is less than 7682 ms for event A3 report then the number of “A3 successes” is increased by one.

6b. If the overall delays measured from the beginning of time period T2 is less than 7202 ms for event B2 report then the number of “B2 successes” is increased by one.

7. After the SS receives the MeasurementReport messages in step 6 or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop. The SS shall set a different BSIC on Cell 3, as the previous timing information of Cell 3 is invalid in the UE for the next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
 - transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
 or
 - switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Table G.2.3-1 in Annex G clause G.2 is achieved. The pass/ fail decisions are done separated for procedure steps 6a) and 6b). In general the number of repetitions up to the decision are different for 6a) and 6b). If one of 6a) or 6b) is passed, steps 1-9 are repeated, however the counter for the passed event is not anymore served. If one of 6a) or 6b) is failed, the test can be stopped.

8.11.5.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.11.5.4.3-1: Common Exception messages for Combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-7

Table 8.11.5.4.3-2: *MeasConfig-DEFAULT*: Additional Combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
measObjectToRemoveList	Not present		
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	8 entry		
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f1	f1 is the frequency of the serving cell (E-UTRA serving cell)	
measObject CHOICE {			
MeasObjectEUTRA	MeasObjectEUTRA-GENERIC(f1)	serving frequency	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f2	f2 is the frequency of the neighbouring cell(E-UTRA inter frequency cell)	
measObject CHOICE {			
MeasObjectEUTRA	MeasObjectEUTRA-GENERIC(f2)	inter frequency	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f3	f3 is the frequency of the neighbouring cell(GERAN cell)	
measObject CHOICE {			
MeasObjectGERAN	MeasObjectGERAN-GENERIC(f3)	inter frequency	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f4	f4 is the frequency of the neighbouring cell(GERAN cell)	
measObject CHOICE {			
MeasObjectGERAN	MeasObjectGERAN-GENERIC(f4)	inter frequency	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f5	f5 is the frequency of the neighbouring cell(GERAN cell)	
measObject CHOICE {			
MeasObjectGERAN	MeasObjectGERAN-GENERIC(f5)	inter frequency	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f6	f6 is the frequency of the neighbouring cell(GERAN cell)	
measObject CHOICE {			
MeasObjectGERAN	MeasObjectGERAN-	inter frequency	

	GENERIC(f6)		
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f7	f7 is the frequency of the neighbouring cell(GERAN cell)	
measObject CHOICE {			
MeasObjectGERAN	MeasObjectGERAN-GENERIC(f7)	inter frequency	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f8	f8 is the frequency of the neighbouring cell(GERAN cell)	
measObject CHOICE {			
MeasObjectGERAN	MeasObjectGERAN-GENERIC(f8)	inter frequency	
}			
}			
}			
reportConfigToRemoveList	Not present		
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId))OF SEQUENCE {	2 entry		
reportConfigToAddMod ::= SEQUENCE {			
reportConfigId	idReportConfig-A3		
reportConfig	ReportConfigEUTRA-A3		
}			
reportConfigToAddMod ::= SEQUENCE {			
reportConfigId	idReportConfig-B2		
reportConfig	ReportConfigInterRAT-B2-GERAN		
}			
}			
measIdToRemoveList	Not present		
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) of SEQUENCE {	2 entry		
measIdToAddMod ::= SEQUENCE {			
measId	1		
measObjectId	IdMeasObject-f2		
reportConfigId	idReportConfig-A3		
}			
measIdToAddMod ::= SEQUENCE {			
measId	2		
measObjectId	IdMeasObject-f3		
reportConfigId	idReportConfig-B2		
}			
}			
quantityConfig	QuantityConfig-DEFAULT		
measGapConfig	MeasGapConfig-GP1		
s-Measure	Not present		
preRegistrationInfoHRPD	Not present		
speedStatePars	Not present		
}			

Table 8.11.5.4.3-3: *ReportConfigEUTRA-A3*: Additional Combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12 (-6 dB)	-6 is actual value in dB (-12 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			

Table 8.11.5.4.3-4: *ReportConfigInterRAT-B2-GERAN*: Additional Combined E-UTRAN FDD – E-UTRA FDD Inter-frequency and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Derivation Path: TS 36.508 [7] clause 4.6.6 Table 4.6.6-7E			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B2-GERAN(EUTRA-Thres, GERAN-Thres) ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventB2 SEQUENCE {			
b2-Threshold1 CHOICE {			
threshold-RSRP	58(-83dBm)	INTEGER(0..97), the mapping table is Table 9.1.4-1 in TS 36.133 [4]	
}			
b2-Threshold2 CHOICE {			
b2-Threshold2-GERAN	31 (-80dBm)		
}			
}			
}			
hysteresis	0 (0 dB)	INTEGER(0..30), 0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	ms0		
}			
}			
}			

Table 8.11.5.4.3-5 *MeasResults*: Additional Combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.11.5.4.3-6: *MeasResultListEUTRA*: Additional Combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultEUTRA {			
MeasResultEUTRA ::= SEQUENCE {			
physCellId	PhysicalCellIdentity		
measResult SEQUENCE {			
rsrpResult		Set according to specific test INTEGER(0..97)	
rsrqResult		Set according to specific test INTEGER(0..34)	
}			
}			

Table 8.11.5.4.3-7: *MeasuredResults*: Additional Combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	2	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult	RSRP-Range	Set according to specific test	
rsrqResult	RSRQ-Range	Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListGERAN	MeasResultListGERAN		
}			
}			

Table 8.11.5.4.3-8: *MeasResultListGERAN*: Additional Combined E-UTRAN FDD – E-UTRA FDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListGERAN ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
carrierFreq	CarrierFreqGERAN		
physCellId	physCellId GERAN		
measResult SEQUENCE {			
rssi	INTEGER (0..63)	Set according to specific test	
}			
}			

8.11.5.5 Test requirement

Tables 8.11.5.5-1 and 8.11.5.5-2 define the primary level settings including test tolerances for two E-UTRAN FDD cells and one GSM cell.

Table 8.11.5.5-1: Cell specific 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 (cell1 and cell2)

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
E-UTRA RF Channel Number		1		2	
$BW_{channel}$	MHz	10		10	
OCNG Patterns defined in D.1.1 (OP.1 FDD) and in D1.2 (OP.2 FDD)		OP.1 FDD		OP.2 FDD	
PBCH_RA	dB	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				
N_{oc} Note 3	dBm/15 kHz	-98		-98	
RSRP Note 4	dBm/15 kHz	-94.20	-94.20	-Infinity	-90.50
$\hat{E}_s/I_{ot}$	dB	3.80	3.80	-Infinity	7.50
SCH_RP Note 4	dBm/15 kHz	-94.20	-94.20	-Infinity	-90.50
$\hat{E}_s/N_{oc}$	dB	3.80	3.80	-Infinity	7.50
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_{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 8.11.5.5-2: Cell specific 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 (cell3)

Parameter	Unit	Cell 3	
		T1	T2
Absolute RF Channel Number		ARFCN3	
RXLEV	dBm	-Infinity	-75
GSM BSIC		N/A	Valid

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.

The overall delays measured test requirement for Event A3 is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify\_inter}$

$$T_{Identify\_Inter} = T_{Basic\_Identify\_Inter} \cdot \frac{480}{T_{Inter1}} \cdot N_{freq} \quad ms$$

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.

T_{inter1}=60ms

N_{freq}=2.

TTI insertion uncertainty = 2 ms

The UE shall send one Event A3 triggered measurement report for cell 2, with a measurement reporting delay less than 7682ms from the beginning of time period T2 (note: this gives a total of 7680 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

The overall delays measured test requirement for Event B2 is:

The delay for GSM cell identification with BSIC verified 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 (table 8.1.2.4.5.1.2.1-1 of TS 36.133 [4]).

The UE shall send one Event B2 triggered measurement report including BSIC of cell 3, with a measurement reporting delay less than 7202ms from the beginning of time period T2 (note: this gives a total of 7200ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

The rate of correct events observed during repeated tests shall be at least 90% with a confidence level of 95%.

The statistical pass/ fail decisions are done separated for event A3 and event B2.

Decide the test pass, if events A3 **and** B2 are passed, otherwise fail the UE.

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

8.11.6.1 Test purpose

The purpose of this test is to verify that the UE makes correct reporting of multiple events when doing inter frequency and GSM measurements.

8.11.6.2 Test applicability

This test applies to all types of E-UTRA TDD UE release 9 and forward that support GSM. Applicability requires support for FGI bit 23, and 25.

8.11.6.3 Minimum conformance requirements

E-UTRAN part:

When measurement gaps are scheduled the UE shall be able to identify a new TDD inter-frequency within $T_{Identify\_Inter}$ according to the following expression:

$$T_{Identify\_Inter} = T_{Basic\_Identify\_Inter} \cdot \frac{480}{T_{Inter1}} \cdot N_{freq} \quad ms$$

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 TDD inter-frequency cell is defined.

N_{freq} is defined in TS 36.133 [4] section 8.1.2.1.1 and T_{inter1} is defined in TS 36.133 [4] section 8.1.2.1

A cell shall be considered detectable provided following conditions are fulfilled:

- RSRP$|_{dBm}$ and RSRP Ês/Iot according to Annex I.2.3 for a corresponding Band,
- other RSRP related side conditions given in TS 36.133 [4] Section 9.1 are fulfilled,
- SCH_RP$|_{dBm}$ and SCH Ês/Iot according to Annex I.2.3 for a corresponding Band.

When measurement gaps are scheduled for TDD inter frequency measurements the UE physical layer shall be capable of reporting measurements to higher layers with measurement accuracy as specified in TS36.133 [4] sub-clause 9.1.3 with measurement period given by table 8.11.6.3-1.

Table 8.11.6.3-1: $T_{Measurement\_Period\_TDD\_Inter}$ 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]
		DL	UL	Normal CP	Extended CP	
0	6	2	2	$19760 \cdot T_s$	$20480 \cdot T_s$	480 x N_{freq}
1 (Note 1)	50	2	2	$19760 \cdot T_s$	$20480 \cdot T_s$	240 x N_{freq}
Note 1: This configuration is optional Note 2: T_s is defined in 3GPP TS 36.211 [9]						

The UE shall be capable of performing RSRP and RSRQ measurements of at least 4 inter-frequency cells per TDD inter-frequency and the UE physical layer shall be capable of reporting RSRP and RSRQ measurements to higher layers with the measurement period $T_{Measurement\_Period\_TDD\_Inter}$.

Reported measurements contained in event triggered periodic measurement reports shall meet the requirements in TS36.133 [4] 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 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 $T_{identify\text{-}inter}$ defined in TS36.133 [4] section 8.1.2.3.2.1. When L3 filtering is used an additional delay can be expected.

If a cell which has been detectable at least for the time period $T_{identify\_inter}$ defined in TS36.133 [4] section 8.1.2.3.2.1 and then triggers the measurement report as per TS 36.331 [5], the event triggered measurement reporting delay shall be less than $T_{Measurement\_Period\_TDD\ Inter}$ defined in TS36.133 [4] section 8.1.2.3.2.1 provided the timing to that cell has not changed more than ± 50 Ts while measurement gap has not been available and the L3 filter has not been used.

The normative reference for this requirement is TS 36.133 [4] clause 8.1.2.3.2.

GSM part:

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 in TS 36.133 [4] is configured by E-UTRAN 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.

This measurement shall be based on measurement gaps allocated for GSM carrier RSSI measurement as described in section 8.1.2.1 in TS 36.133 [4] 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 N_{freq} * 480 ms. The parameter N_{freq} is defined in clause 8.1.2.1.1 of TS 36.133 [4] as:

$N_{freq} = N_{freq,\ E\text{-}UTRA} + N_{freq,\ UTRA} + M_{gsm} + N_{freq,\ cdma2000} + N_{freq,\ HRPD}$

Where:

$N_{freq,\ E\text{-}UTRA}$ is the number of E-UTRA carriers being monitored

$N_{freq,\ UTRA}$ is the number of UTRA carriers being monitored

$N_{freq,\ cdma2000}$ is the number of cdma2000 carriers being monitored

$N_{freq,\ HRPD}$ is the number of HRPD carriers being monitored

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 Measurement Gap Repetition Period (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

The UE shall meet the measurement accuracy requirements stated for RXLEV in TS 45.008 [15], 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.

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 TDD 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 section 8.1.2.4.5.1.2.1 of TS 36.133 [4].

- **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 section 8.1.2.4.5.1.2.2 of TS 36.133 [4].

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 section 8.1.2.4.5.1 in TS 36.133 [4] when a measurement gap pattern sequence is activated.
- The UE shall perform measurement reporting as defined in TS 36.331 [5].
- The UE shall perform BSIC identification if BSIC verified measurements are activated by RRC. 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 [5].

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 $8 \cdot T_{re\text{-}confirm,GSM}$ 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.

$T_{re\text{-}confirm,GSM}$ 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 of TS 36.133 [4].

The UE shall be able to perform BSIC verification at levels down to the reference sensitivity level or reference interference levels as specified in TS 45.005 [16].

This measurement shall be based on the measurement gaps used for Initial BSIC identification as described in section 8.1.2.4.5.1.2 of TS 36.133 [4].

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 of TS 36.133 [4]. The requirements in the table represent the time required to guarantee at least two attempts to decode the BSIC for one GSM BCCH carrier.

Reported measurements in event triggered measurement reports shall meet the requirements in section TS 36.331 [5].

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.

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 section 8.1.2.4.5.1 of TS 36.133 [4]).

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 section 8.1.2.4.5.1 of TS 36.133 [4] When L3 filtering is used an additional delay can be expected.

The normative reference for this requirement is TS 36.133 [4] clauses 8.1.2.3.2, 8.1.2.4.6 and A.8.11.6.

8.11.6.4 Test description

8.11.6.4.1 Initial conditions

Test Environment: Normal, as defined in TS 36.508 [7] clause 4.1.

Frequencies to be tested: According to Annex E table E-1 and TS 36.508 [7] clauses 4.4.2 and 4.3.1.

Channel Bandwidth to be tested: 10MHz as defined in TS 36.508 [7] clause 4.3.1.

1. Connect the SS (node B emulator), AWGN noise source and Fader to the UE antenna connectors as shown in TS 36.508 [7] Annex A Figure A.25.

2. The general test parameter settings are set up according to Table 8.11.6.4.1-1.

3. Propagation conditions are set according to Annex B clause B.0.

4. Message contents are as defined in clause 8.11.6.4.3.

5. There are two E-UTRA TDD cells operating on different frequency and one GSM cell specified in the test. Cell 1 (EUTRA TDD cell on RF channel number 1) is the cell used for registration with the power level set according to Annex C.0 and C.1 for this test.

Table 8.11.6.4.1-1: 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-UTRAN TDD)		DL Reference Measurement Channel R.0 TDD	As specified in section A.1.2.
PCFICH/PDCCH/PHICH parameters (E-UTRAN TDD)		DL Reference Measurement Channel R.6 TDD	As specified in section A.2.2.
Special subframe configuration of cell1 and cell2		6	As specified in table 4.2-1 in TS 36.211 [9]. The same configuration in both cells
Uplink-downlink configuration of cell1 and cell2		1	As specified in 3GPP TS 36.211 [9] section 4.2 Table 4.2-2
Gap Pattern Id		0	As specified in 3GPP TS 36.133 [4] section 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 TDD measurement quantity		RSRP	
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 TDD cells	ms	3 ms	Asynchronous cells
Inter-RAT (GSM) measurement quantity		GSM Carrier RSSI	
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	

8.11.6.4.2 Test procedure

This test scenario comprised of 2 E-UTRA TDD cells operating on different frequency, and 1 GSM cell. 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. At T1 the UE is camped on to Cell 1.

1. Ensure the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.
2. Set the parameters according to T1 in Table 8.11.6.5-1and Table 8.11.6.5-2. T1 starts.
3. SS shall transmit an RRCConnectionReconfiguration message.
4. The UE shall transmit RRCConnectionReconfigurationComplete message.
5. When T1 expires, the SS shall switch the power setting from T1 to T2 as specified in Table 8.11.6.5-1and Table 8.11.6.5-2.
6. UE shall transmit a MeasurementReport message triggered by event A3 and B2.

6a. If the overall delays measured from the beginning of time period T2 is less than 7682 ms for event A3 report then the number of "A3 successes" is increased by one.

6b. If the overall delays measured from the beginning of time period T2 is less than 7202 ms for event B2 report then the number of "B2 successes" is increased by one.

7. After the SS receives the MeasurementReport messages in step 6 or when T2 expires, the SS shall transmit RRCConnectionRelease message to release the RRC connection which includes the release of the established radio bearers as well as all radio resources.

8. Set Cell 2 physical cell identity = ((current cell 2 physical cell identity + 1) mod 14 + 2) for next iteration of the test procedure loop. The SS shall set a different BSIC on Cell 3, as the previous timing information of Cell 3 is invalid in the UE for the next iteration of the test procedure loop.

9. After the RRC connection release, the SS:
- transmits in Cell 1 a Paging message (including PagingRecord with ue-Identity) for the UE and ensures the UE is in State 3A according to TS 36.508 [7] clause 4.5.3A (if the paging fails, switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3),
or
- switches off and on the UE and ensures the UE is in State 3A-RF according to TS 36.508 [7] clause 7.2A.3.

10. Repeat step 2-9 until the confidence level according to Table G.2.3-1 in Annex G clause G.2 is achieved. The pass/ fail decisions are done separated for procedure steps 6a) and 6b). In general the number of repetitions up to the decision are different for 6a) and 6b). If one of 6a) or 6b) is passed, steps 1-9 are repeated, however the counter for the passed event is not anymore served. If one of 6a) or 6b) is failed, the test can be stopped.

8.11.6.4.3 Message contents

Message contents are according to TS 36.508 [7] clause 4.6 with the following exceptions:

Table 8.11.6.4.3-1: Common Exception messages for Combined E-UTRAN TDD - E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Default Message Contents	
Common contents of system information blocks exceptions	
Default RRC messages and information elements contents exceptions	Table H.3.1-1 Table H.3.1-7

Table 8.11.6.4.3-2: *MeasConfig-DEFAULT*: Additional Combined E-UTRAN TDD - E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig-DEFAULT ::= SEQUENCE {			
measObjectToRemoveList	Not present		
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	8 entry		
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f1	f1 is the frequency of the serving cell (E-UTRA serving cell)	
measObject CHOICE {			
MeasObjectEUTRA	MeasObjectEUTRA-GENERIC(f1)	serving frequency	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f2	f2 is the frequency of the neighbouring cell(E-UTRA inter frequency cell)	
measObject CHOICE {			
MeasObjectEUTRA	MeasObjectEUTRA-GENERIC(f2)	inter frequency	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f3	f3 is the frequency of the neighbouring cell(GERAN cell)	
measObject CHOICE {			
MeasObjectGERAN	MeasObjectGERAN-GENERIC(f3)	inter frequency	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f4	f4 is the frequency of the neighbouring cell(GERAN cell)	
measObject CHOICE {			
MeasObjectGERAN	MeasObjectGERAN-GENERIC(f4)	inter frequency	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f5	f5 is the frequency of the neighbouring cell(GERAN cell)	
measObject CHOICE {			
MeasObjectGERAN	MeasObjectGERAN-GENERIC(f5)	inter frequency	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f6	f6 is the frequency of the neighbouring cell(GERAN cell)	
measObject CHOICE {			
MeasObjectGERAN	MeasObjectGERAN-	inter frequency	

	GENERIC(f6)		
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f7	f7 is the frequency of the neighbouring cell(GERAN cell)	
measObject CHOICE {			
MeasObjectGERAN	MeasObjectGERAN-GENERIC(f7)	inter frequency	
}			
}			
MeasObjectToAddMod SEQUENCE {			
measObjectId	IdMeasObject-f8	f8 is the frequency of the neighbouring cell(GERAN cell)	
measObject CHOICE {			
MeasObjectGERAN	MeasObjectGERAN-GENERIC(f8)	inter frequency	
}			
}			
}			
reportConfigToRemoveList	Not present		
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId))OF SEQUENCE {	2 entry		
reportConfigToAddMod ::= SEQUENCE {			
reportConfigId	idReportConfig-A3		
reportConfig	ReportConfigEUTRA-A3		
}			
reportConfigToAddMod ::= SEQUENCE {			
reportConfigId	idReportConfig-B2		
reportConfig	ReportConfigInterRAT-B2-GERAN		
}			
}			
measIdToRemoveList	Not present		
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) of SEQUENCE {	2 entry		
measIdToAddMod ::= SEQUENCE {			
measId	1		
measObjectId	IdMeasObject-f2		
reportConfigId	idReportConfig-A3		
}			
measIdToAddMod ::= SEQUENCE {			
measId	2		
measObjectId	IdMeasObject-f3		
reportConfigId	idReportConfig-B2		
}			
}			
quantityConfig	QuantityConfig-DEFAULT		
measGapConfig	MeasGapConfig-GP1		
s-Measure	Not present		
preRegistrationInfoHRPD	Not present		
speedStatePars	Not present		
}			

Table 8.11.6.4.3-3: *ReportConfigEUTRA-A3*: Additional Combined E-UTRAN TDD - E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Derivation Path: TS 36.508 [7] clause 4.6.6, Table 4.6.6-6			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA3 SEQUENCE {			
a3-Offset	-12 (-6 dB)	-6 is actual value in dB (-12 * 0.5 dB)	
reportOnLeave	FALSE		
}			
}			
hysteresis	0 (0 dB)	0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	0 (0 ms)		
}			
}			

Table 8.11.6.4.3-4: *ReportConfigInterRAT-B2-GERAN*: Additional Combined E-UTRAN TDD - E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Derivation Path: TS 36.508 [7] clause 4.6.6 Table 4.6.6-7E			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B2-GERAN(EUTRA-Thres, GERAN-Thres) ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventB2 SEQUENCE {			
b2-Threshold1 CHOICE {			
threshold-RSRP	58(-83dBm)	INTEGER(0..97), the mapping table is Table 9.1.4-1 in TS 36.133 [4]	
}			
b2-Threshold2 CHOICE {			
b2-Threshold2-GERAN	31 (-80dBm)		
}			
}			
}			
hysteresis	0 (0 dB)	INTEGER(0..30), 0 is actual value in dB (0 * 0.5 dB)	
timeToTrigger	ms0		
}			
}			
}			

Table 8.11.6.4.3-5 *MeasResults*: Additional Combined E-UTRAN TDD - E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	1	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult		Set according to specific test	
rsrqResult		Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListEUTRA	MeasResultListEUTRA		
}			
}			

Table 8.11.6.4.3-6: *MeasResultListEUTRA*: Additional Combined E-UTRAN TDD - E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultEUTRA {			
MeasResultEUTRA ::= SEQUENCE {			
physCellId	PhysicalCellIdentity		
measResult SEQUENCE {			
rsrpResult		Set according to specific test INTEGER(0..97)	
rsrqResult		Set according to specific test INTEGER(0..34)	
}			
}			

Table 8.11.6.4.3-7: *MeasuredResults*: Additional Combined E-UTRAN TDD - E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResults ::= SEQUENCE {			
measId	2	Identifies the measurement id for the reporting being performed	
measResultServCell SEQUENCE {			
rsrpResult	RSRP-Range	Set according to specific test	
rsrqResult	RSRQ-Range	Set according to specific test	
}			
measResultNeighCells CHOICE {			
measResultListGERAN	MeasResultListGERAN		
}			
}			

Table 8.11.6.4.3-8: *MeasResultListGERAN*: Additional Combined E-UTRAN TDD - E-UTRA TDD and GSM cell search. E-UTRA cells in fading; GSM cell in static propagation conditions

Derivation Path: TS 36.331 [5] clause 6.3.5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasResultListGERAN ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
carrierFreq	CarrierFreqGERAN		
physCellId	physCellId GERAN		
measResult SEQUENCE {			
rssi	INTEGER (0..63)	Set according to specific test	
}			
}			

8.11.6.5 Test requirement

Tables 8.11.6.5-1 and 8.11.6.5-2 define the primary level settings including test tolerances for two E-UTRAN TDD cells and one GSM cell.

Table 8.11.6.5-1: Cell specific 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 (cell1 and cell2)

Parameter	Unit	Cell 1		Cell 2	
		T1	T2	T1	T2
E-UTRA RF Channel Number		1		2	
$BW_{channel}$	MHz	10		10	
OCNG Patterns defined in D.2.1 (OP.1 TDD) and in D.2.2 (OP.2 TDD)		OP.1 TDD		OP.2 TDD	
PBCH_RA	dB	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				
N_{oc} Note 3	dBm/15 kHz	-98		-98	
RSRP Note 4	dBm/15 kHz	-94.20	-94.20	-Infinity	-90.50
$\hat{E}_s/I_{ot}$	dB	3.80	3.80	-Infinity	7.50
SCH_RP Note 4	dBm/15 kHz	-94.20	-94.20	-Infinity	-90.50
$\hat{E}_s/N_{oc}$	dB	3.80	3.80	-Infinity	7.50
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_{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 8.11.6.5-2: Cell specific 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 (cell3)

Parameter	Unit	Cell 3	
		T1	T2
Absolute RF Channel Number		ARFCN3	
RXLEV	dBm	-Infinity	-75
GSM BSIC		N/A	Valid

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.

The overall delays measured test requirement for Event A3 is expressed as:

Overall delays measured = measurement reporting delay + TTI insertion uncertainty

Measurement reporting delay = $T_{identify\_inter}$

$$T_{Identify\_Inter} = T_{Basic\_Identify\_Inter} \cdot \frac{480}{T_{Inter1}} \cdot N_{freq} \quad ms$$

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 TDD inter-frequency cell is defined.

T_{inter1}=60ms

N_{freq}=2.

TTI insertion uncertainty = 2 ms

The UE shall send one Event A3 triggered measurement report for cell 2, with a measurement reporting delay less than 7682 ms from the beginning of time period T2 (note: this gives a total of 7680 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

The overall delays measured test requirement for Event B2 is:

The delay for GSM cell identification with BSIC verified 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 (table 8.1.2.4.5.1.2.1-1 of TS 36.133 [4]).

The UE shall send one Event B2 triggered measurement report including BSIC of cell 3, with a measurement reporting delay less than 7202 ms from the beginning of time period T2 (note: this gives a total of 7200 ms for measurement reporting delay plus 2 ms for TTI insertion uncertainty).

The rate of correct events observed during repeated tests shall be at least 90% with a confidence level of 95%.

The statistical pass/ fail decisions are done separated for event A3 and event B2.

Decide the test pass, if events A3 **and** B2 are passed, otherwise fail the UE.

8.12 Void

8.13 Void