8.3 Measurement configuration control and reporting

8.3.1 Intra E-UTRAN measurements

8.3.1.1 Measurement configuration control and reporting / Intra E-UTRAN measurements / Event A1

8.3.1.1.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurement configured for event A1 with event based
periodical reporting }
ensure that {
  when { Serving cell becomes better than absolute threshold plus hysteresis }
   then { UE sends MeasurementReport message at regular intervals while entering conditions for
event A1 are satisfied }
}
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and periodical measurement reporting triggered by event A1
ongoing}
ensure that {
  when { Serving cell becomes worse than absolute threshold minus hysteresis }
   then { UE stops sending MeasurementReport message }
}
```

8.3.1.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.4.1, 5.5.4.2 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

...

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the measIdList within *VarMeasConfig*:

…

2> else:

...

3> if the corresponding *measObject* concerns EUTRA:

4> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

...

2> if the *triggerType* is set to '*event'* and if the entry condition applicable for this event, i.e. the event corresponding with the eventId of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one

or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event'* and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the triggerType is set to 'event' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during of *timeToTrigger* defined within the *VarMeasurementConfiguration* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

…

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

…

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

…

[TS 36.331, clause 5.5.4.2]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A1-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A1-2, as specified below, is fulfilled;

InequalityA1-1 (Entering condition)

$$Ms - Hys > Thresh$$

InequalityA1-2 (Leaving condition)

$$Ms + Hys < Thresh$$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any offsets.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Thresh is the threshold parameter for this event (i.e. *a1-Threshold* as defined within *reportConfigEUTRA* for this event).

Ms is expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Hys is expressed in dB.

Thresh is expressed in the same unit as ***Ms***.

[TS 36.331, clause 5.5.5]

…

For the measId for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

...

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId;*

2> start the periodical reporting timer with the value of *reportInterval* as defined within the *reportConfig* for this *measId*;

…

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends.

8.3.1.1.3 Test description

8.3.1.1.3.1 Pre-test conditions

System Simulator:

- Cell 1

Preamble:

- The UE is in state Generic RB Established (state 3) according to [18].

8.3.1.1.3.2 Test procedure sequence

Table 8.3.1.1.3.2-1 illustrates the downlink power levels to be applied for Cell 1 at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while rows marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.1.3.2-1: Power levels

	Parameter	Unit	Cell 1	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-85	Power level is such that *Ms* + *Hys* < *Thresh*
T1	Cell-specific RS EPRE	dBm/15 kHz	-59	Power level is such that entry condition for event A1 is satisfied *Ms* – *Hys* > *Thresh*
T2	Cell-specific RS EPRE	dBm/15 kHz	-85	Power level is such that exit condition for event A1 is satisfied *Ms* + *Hys* < *Thresh*
Note: The total test tolerance used is the sum of downlink signal level uncertainty (TS 36.508 clause 6.2.2.1) and absolute UE measurement accuracy (TS 36.133 clause 9).				

Table 8.3.1.1.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including *MeasConfig* to setup intra LTE measurement and reporting for event A1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RCConnectionReconfigrationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.1.3.2-1.	-	-	-	-
4	Check: Does the UE transmit a *MeasurementReport* message to report event A1 with the measured RSRP and RSRQ value for Cell 1?	-->	*MeasurementReport*	1	P
-	EXCEPTION: Step 5 below is repeated until 3 *MeasurementReport* messages are received from the UE	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message, with the measured RSRP and RSRQ value for Cell 1?	-->	*MeasurementReport*	1	P
6	SS re-adjusts the cell-specific reference signal level according to row "T2" in table 8.3.1.1.3.2-1.	-	-	-	-
7	Wait and ignore *MeasurementReport* messages for 15 s to allow change of power levels for Cell 1 and UE measurement.	-	-	-	-
8	Check: Does the UE attempt to transmit an uplink message within the next 10s?	-	-	2	F

8.3.1.1.3.3 Specific message contents

Table 8.3.1.1.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.1.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.1.3.3-2: *MeasConfig* (step 1, Table 8.3.1.1.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/Remark**	**Comment**	**Condition**
measConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A1		
reportConfig[1]	ReportConfig-A1-H		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A1		
}			
}			

Table 8.3.1.1.3.3-3: *ReportConfig-A1-H* (step 1, Table 8.3.1.1.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-4 ReportConfigEUTRA-A1(-72)			
Information Element	**Value/Remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
hysteresis	6	3dB	
}			
}			
reportAmount	infinity		
}			

Table 8.3.1.1.3.3-4: *MeasurementReport* (steps 4 and 5, Table 8.3.1.1.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {}	Not present		
}			
}			
}			
}			
}			

8.3.1.2 Measurement configuration control and reporting / Intra E-UTRAN measurements / Event A2

8.3.1.2.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurement configured for event A2 with event based
periodical reporting }
ensure that {
  when { Serving cell becomes worse than absolute threshold minus hysteresis }
   then { UE sends MeasurementReport message at regular intervals while entering conditions for
event A2 are satisfied }
}
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and periodical measurement reporting triggered by event A2
ongoing}
ensure that {
  when { Serving cell becomes better than absolute threshold plus hysteresis }
   then { UE stops sending MeasurementReport message }
}
```

8.3.1.2.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.4.1, 5.5.4.3 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

...

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the measIdList within *VarMeasConfig*:

…

2> else:

3> if the corresponding *measObject* concerns EUTRA:

4> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

...

2> if the *triggerType* is set to '*event'* and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* while the *VarMeasReportList* does not include a measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event'* and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event'* and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

…

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

…

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

…

[TS 36.331, clause 5.5.4.3]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A2-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A2-2, as specified below, is fulfilled;

Inequality A2-1 (Entering condition)

$$Ms + Hys < Thresh$$

Inequality A2-2 (Leaving condition)

$$Ms - Hys > Thresh$$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any offsets.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within the *reportConfigEUTRA* for this event).

Thresh is the threshold parameter for this event (i.e. *a2-Threshold* as defined within the *reportConfigEUTRA* for this event).

Ms is expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Hys is expressed in dB.

Thresh is expressed in the same unit as ***Ms***.

[TS 36.331, clause 5.5.5]

…

For the measId for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report :

...

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding reportConfigfor this *measId* :

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

...

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends.

8.3.1.2.3 Test description

8.3.1.2.3.1 Pre-test conditions

System Simulator:

- Cell 1

Preamble:

- The UE is in state Generic RB Established (state 3) according to [18].

8.3.1.2.3.2 Test procedure sequence

Table 8.3.1.2.3.2-1 illustrates the downlink power levels to be applied for Cell 1 at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while rows marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.2.3.2-1: Power levels

	Parameter	Unit	Cell 1	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-70	Power level is such that *Ms > Thresh + Hys*
T1			-96	Power level is such that entry condition for event A2 is satisfied *Ms + Hys < Thresh*
T2			-70	Power level is such that exit condition for event A2 is satisfied *Ms > Thresh + Hys*
Note: The total tolerance used is the sum of downlink signal level uncertainty (TS 36.508 clause 6.2.2.1) and absolute UE measurement accuracy (TS 36.133 clause 9).				

Table 8.3.1.2.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup intra LTE measurement and reporting for event A2.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmit an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.2.3.2-1.	-	-	-	-
4	Check: Does the UE transmit a *MeasurementReport* message to report event A2 with the measured RSRP and RSRQ value for Cell 1?	-->	*MeasurementReport*	1	P
-	EXCEPTION: Step 5 below is repeated until 3 *MeasurementReport* messages are received from the UE	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message, with the measured RSRP and RSRQ value for Cell 1?	-->	*MeasurementReport*	1	P
6	SS re-adjusts the cell-specific reference signal level according to row "T2" in table 8.3.1.2.3.2-1.	-	-	-	-
7	Wait and ignore *MeasurementReport* messages for 15 s to allow change of power levels for Cell 1 and UE measurement.	-	-	-	-
8	Check: Does the UE attempt to transmit an uplink message within the next 10s?	-		2	F

8.3.1.2.3.3 Specific message contents

Table 8.3.1.2.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.2.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.2.3.3-2: *MeasConfig* (step 1, Table 8.3.1.2.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/Remark**	**Comment**	**Condition**
measConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A2		
reportConfig[1]	ReportConfig-A2-H		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A2		
}			
}			

Table 8.3.1.2.3.3-3: *ReportConfig-A2-H* (step 1, Table 8.3.1.2.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-5 ReportConfigEUTRA-A2(-83)			
Information Element	**Value/Remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
hysteresis	6	3 dB	
}			
}			
reportAmount	infinity		
}			

Table 8.3.1.2.3.3-4: *MeasurementReport* (steps 4 and 5, Table 8.3.1.2.3.2-2)

Derivation path: 36.508 table clause 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {}	Not present		
}			
}			
}			
}			
}			

8.3.1.3 Measurement configuration control and reporting / Intra E-UTRAN measurements / Two simultaneous events A3 (intra and inter-frequency measurements)

8.3.1.3.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurements configured for two event A3 at the same
time}
ensure that {
  when { Entry condition for event A3 is not met }
   then { UE does not send MeasurementReport }
}
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and measurements configured for two event A3 at the same
time}
ensure that {
  when { Neighbour becomes offset better than serving }
   then { UE sends MeasurementReport with correct measId for event A3 }
}
```

8.3.1.3.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.4.1, 5.5.4.4 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> If the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the Measurement configuration procedure as specified in 5.5.2;

...

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the corresponding *reportConfig* includes a purpose set to '*reportStrongestCellsForSON*':

3> consider any neighbouring cell detected on the associated frequency to be applicable;

2> else if the corresponding *reportConfig* includes a purpose set to '*reportCGI*':

3> consider any neighbouring cell detected on the associated frequency/ set of frequencies (GERAN) which has a physical cell identity matching the value of the *cellForWhichToReportCGI* included in the corresponding *measObject* within the *VarMeasConfig* to be applicable;

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the *VarMeasConfig* for this *measId*;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *purpose is* included and set to '*reportCGI*' and if the UE acquired the information needed to set all fields of *cellGlobalId* for the requested cell:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> stop timer T321;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> upon expiry of the T321 for this *measId*:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

NOTE 3: If the UE is configured with DRX, the UE may delay the measurement reporting for event triggered and periodical triggered measurements until the Active Time, which is defined in TS 36.321 [6].

[TS 36.331, clause 5.5.4.4]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A3-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A3-2, as specified below, is fulfilled;

Inequality A3-1 (Entering condition)

$$Mn + Ofn + Ocn - Hys > Ms + Ofs + Ocs + Off$$

Inequality A3-2 (Leaving condition)

$$Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off$$

The variables in the formula are defined as follows:

Mn is the measurement result of the neighbouring cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the neighbour cell (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell).

Ocn is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.

Ms is the measurement result of the serving cell, not taking into account any offsets.

Ofs is the frequency specific offset of the serving frequency (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the serving frequency).

Ocs is the cell specific offset of the serving cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the serving frequency), and is set to zero if not configured for the serving cell.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Off is the offset parameter for this event (i.e. *a3-Offset* as defined within *reportConfigEUTRA* for this event).

Mn, Ms are expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Ofn, Ocn, Ofs, Ocs, Hys, Off are expressed in dB.

[TS 36.331, clause 5.5.5]

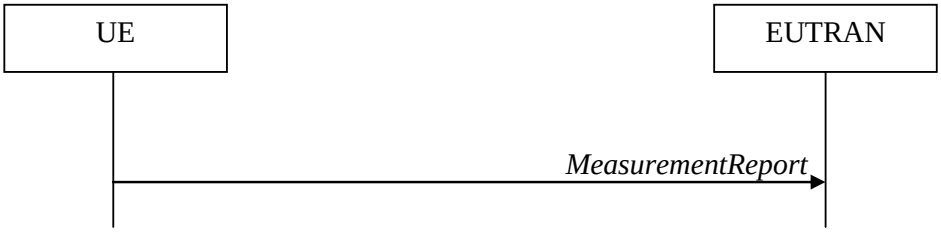

Figure 5.5.5-1: Measurement reporting

The purpose of this procedure is to transfer measurement results from the UE to E-UTRAN.

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of decreasing quantity, i.e. the best cell is included first;

3> else if the *purpose* is set to '*reportCGI*':

4> if the mandatory present fields of the *cellGlobalId* for the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* have been obtained:

5> include the *cgi-Info* containing all the fields that have been successfully acquired;

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

1> else:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasReportList* for this *measId*;

3> remove this *measId* from the *measIdList* within *VarMeasConfig*;

1> if the measured results are for CDMA2000 HRPD:

2> set the *preRegistrationStatusHRPD* to the UE's CDMA2000 upper layer's HRPD *preRegistrationStatus*;

1> if the measured results are for CDMA2000 1xRTT:

2> set the *preRegistrationStatusHRPD* to '*FALSE*';

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.1.3.3 Test description

8.3.1.3.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 2 and Cell 3
- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.3.3.2 Test procedure sequence

Table 8.3.1.3.3.2-1 illustrates the downlink power levels to be applied for Cell 1, Cell 2 and Cell 3 at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while rows marked "T1"and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.3.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 2 (DL only)	Cell 3 (DL only)	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	-91	Off	Power levels are such that entry condition for event A3 (measId 1 & 2) is not satisfied: $Mn+Ofn+Ocn+Hys < Ms+Ofs+Ocs+Off$
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-79	Off	Power levels are such that entry condition for event A3 (measId 1) is satisfied: $Mn+Ofn+Ocn-Hys > Ms+Ofs+Ocs+Off$
T2	Cell-specific RS EPRE	dBm/15kHz	-85	Off	-73	Power levels are such that entry condition for event A3 (measId 2) is satisfied: $Mn+Ofn+Ocn-Hys > Ms+Ofs+Ocs+Off$

Table 8.3.1.3.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including *MeasConfig* to setup intra E-UTRAN measurement and reporting for two event A3 (*measId* 1 and *measId* 2) (intra and inter frequency measurement).	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RCConnectionReconfigrationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE transmit a *MeasurementReport* message within the next 10s?	-->	*MeasurementReport*	1	F
4	SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.3.3.2-1.	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message to report event A3 (*measId* 1) with the measured RSRP value for Cell 2?	-->	*MeasurementReport*	2	P
6	SS re-adjusts the cell-specific reference signal level according to row "T2" in table 8.3.1.3.3.2-1.	-	-	-	-
7	Void	-	-	-	-
8	Check: Does the UE transmit a *MeasurementReport* message to report event A3 (*measId* 2) with the measured RSRP value for Cell 3?	-->	*MeasurementReport*	2	P

8.3.1.3.3.3 Specific message contents

Table 8.3.1.3.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.3.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.3.3.3-2: *MeasConfig* (step 1, Table 8.3.1.3.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1, condition INTER-FREQ			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f2		
measObject[2]	MeasObjectEUTRA-GENERIC(f2)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfig-A3-H		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3		
measId[2]	2		
measObjectId[2]	IdMeasObject-f2		
reportConfigId[2]	IdReportConfig-A3		
}			
}			

Table 8.3.1.3.3.3-3: *ReportConfig-A3-H* (step 1, Table 8.3.1.3.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
timeToTrigger	ms0		
}			
}			
reportQuantity	sameAsTriggerQuantity		
}			

Table 8.3.1.3.3.3-4: *MeasurementReport* (step 5, Table 8.3.1.3.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
MeasResultEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 2	
physCellId	physCellId of the Cell 2.		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.3.3.3-5: MeasurementReport (step 8, Table 8.3.1.3.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
MeasResultEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 3	
physCellId	physCellId of the Cell 3.		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
}			
}			
}			
}			

8.3.1.3a Measurement configuration control and reporting / Intra E-UTRAN measurements / Two simultaneous events A3 (intra and inter-frequency measurements) / RSRQ based measurements

8.3.1.3a.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state, measurements configured for two event A3 at the same time
and triggerQuantity set to rsrq }
ensure that {
  when { Entry condition for event A3 is not met }
    then { UE does not send MeasurementReport }
            }
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state, measurements configured for two event A3 at the same time
and triggerQuantity set to rsrq }
ensure that {
  when { Neighbour becomes offset better than serving }
    then { UE sends MeasurementReport with correct measId for event A3 }
            }
```

8.3.1.3a.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.5.3, 5.5.4.1, 5.5.4.4 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the corresponding *reportConfig* includes a purpose set to '*reportStrongestCellsForSON*':

3> consider any neighbouring cell detected on the associated frequency to be applicable;

2> else if the corresponding *reportConfig* includes a purpose set to '*reportCGI*':

3> consider any neighbouring cell detected on the associated frequency/ set of frequencies (GERAN) which has a physical cell identity matching the value of the *cellForWhichToReportCGI* included in the corresponding *measObject* within the *VarMeasConfig* to be applicable;

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> if the *ue-RxTxTimeDiffPeriodical*, *eventA1* or *eventA2* is configured in the corresponding *reportConfig*:

5> consider only the serving cell to be applicable;

4> else:

5> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

NOTE 0: The UE may also consider a neighbouring cell on the associated UTRA frequency to be applicable when the concerned cell is included in the *csg-allowedReportingCells* within the *VarMeasConfig* for this *measId*, if configured in the corresponding *measObjectUTRA* (i.e. the cell is included in the range of physical cell identities for which reporting is allowed).

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the *VarMeasConfig* for this *measId*;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *purpose is* included and set to '*reportCGI*' and if the UE acquired the information needed to set all fields of *cgi-Info* for the requested cell:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> stop timer T321;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> upon expiry of the T321 for this *measId*:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

NOTE 3: If the UE is configured with DRX, the UE may delay the measurement reporting for event triggered and periodical triggered measurements until the Active Time, which is defined in TS 36.321 [6].

[TS 36.331, clause 5.5.4.4]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A3-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A3-2, as specified below, is fulfilled;

Inequality A3-1 (Entering condition):

$$Mn + Ofn + Ocn - Hys > Ms + Ofs + Ocs + Off$$

Inequality A3-2 (Leaving condition):

$$Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off$$

The variables in the formula are defined as follows:

Mn is the measurement result of the neighbouring cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the neighbour cell (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell).

Ocn is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.

Ms is the measurement result of the serving cell, not taking into account any offsets.

Ofs is the frequency specific offset of the serving frequency (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the serving frequency).

Ocs is the cell specific offset of the serving cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the serving frequency), and is set to zero if not configured for the serving cell.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Off is the offset parameter for this event (i.e. *a3-Offset* as defined within *reportConfigEUTRA* for this event).

Mn, Ms are expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Ofn, Ocn, Ofs, Ocs, Hys, Off are expressed in dB.

[TS 36.331, clause 5.5.5]

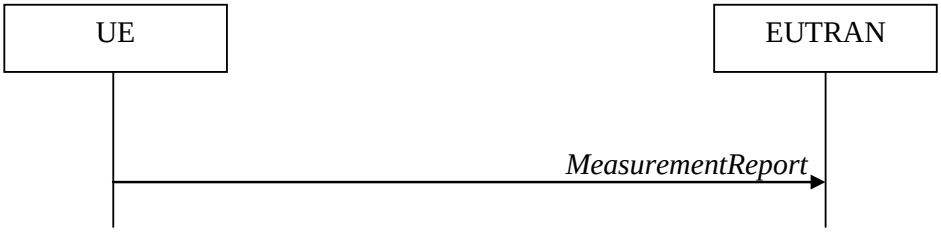

Figure 5.5.5-1: Measurement reporting

The purpose of this procedure is to transfer measurement results from the UE to E-UTRAN.

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of either decreasing quantity for UTRA and GERAN or increasing quantity for CDMA2000 *pilotStrength*, i.e. the best cell is included first;

3> else if the *purpose* is set to '*reportCGI*':

4> if the mandatory present fields of the *cgi-Info* for the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* have been obtained:

5> if the cell broadcasts a CSG identity:

6> include the *csg-Identity*;

6> include the *csg-MemberStatus* and set it to '*member*' if the cell is a CSG member cell;

5> if the '*si-RequestForHO*' is configured within the *reportConfig* associated with this *measId*:

6> include the *cgi-Info* containing all the fields that have been successfully acquired, except for the *plmn-IdentityList*;

5> else:

6> include the *cgi-Info* containing all the fields that have been successfully acquired;

1> if the *ue-RxTxTimeDiffPeriodical* is configured within the corresponding *reportConfig* for this *measId*;

2> set the *ue-RxTxTimeDiffResult* to the measurement result provided by lower layers;

2> set the *currentSFN*;

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

1> else:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasReportList* for this *measId*;

3> remove this *measId* from the *measIdList* within *VarMeasConfig*;

1> if the measured results are for CDMA2000 HRPD:

2> set the *preRegistrationStatusHRPD* to the UE's CDMA2000 upper layer's HRPD *preRegistrationStatus*;

1> if the measured results are for CDMA2000 1xRTT:

2> set the *preRegistrationStatusHRPD* to '*FALSE*';

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.1.3a.3 Test description

8.3.1.3a.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 2 and Cell 3
- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.3a.3.2 Test procedure sequence

Table 8.3.1.3a.3.2-1 illustrates the downlink power levels to be applied for Cell 1, Cell 2 and Cell 3 at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while rows marked "T1"and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.3a.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 2 (DL only)	Cell 3 (DL only)	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-85	-91	"Off"	Power levels are such that entry condition for event A3 (*measId* 1 & 2) is not satisfied: $Mn+Ofn+Ocn+Hys < Ms+Ofs+Ocs+Off$
	RSRQ	dB	-8	-14	-	
	Noc	dBm/15 kHz	-90	-90	-100	
T1	Cell-specific RS EPRE	dBm/15 kHz	-91	-85	"Off"	Power levels are such that entry condition for event A3 (*measId* 1) is satisfied: $Mn+Ofn+Ocn-Hys > Ms+Ofs+Ocs+Off$
	RSRQ	dB	-14]	-8	-	
T2	Cell-specific RS EPRE	dBm/15 kHz	-91	"Off"	-97	Power levels are such that entry condition for event A3 (*measId* 2) is satisfied: $Mn+Ofn+Ocn-Hys > Ms+Ofs+Ocs+Off$
	RSRQ	dB	-12.33	-	-3.76	
NOTE 1: Power level "Off" is defined in TS36.508 Table 6.2.2.1-1.						

Table 8.3.1.3a.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 including *MeasConfig* to setup intra E-UTRAN measurement and reporting for two event A3 (*measId* 1 and *measId* 2) (intra and inter frequency measurement).	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 within the next 10s?	-->	*MeasurementReport*	1	F
3A	The SS notifies the UE of change of System Information and changes the system information 3. The *systemInfoValueTag* in the *SystemInformationBlockType1* is increased.	<--	*Paging*	-	-
4	The SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.3a.3.2-1.	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 to report event A3 (*measId* 1) with the measured RSRP and RSRQ values for Cell 2?	-->	*MeasurementReport*	2	P
6	The SS re-adjusts the cell-specific reference signal level according to row "T2" in table 8.3.1.3a.3.2-1.	-	-	-	-
7	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 to report event A3 (*measId* 2) with the measured RSRP and RSRQ values for Cell 3?	-->	*MeasurementReport*	2	P

8.3.1.3a.3.3 Specific message contents

Table 8.3.1.3a.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.3a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.1.3a.3.3-2: *MeasConfig* (Table 8.3.1.3a.3.3-1)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f2		
measObject[2]	MeasObjectEUTRA-GENERIC(f2)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfigEUTRA-A3-RSRQ		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3		
measId[2]	2		
measObjectId[2]	IdMeasObject-f2		
reportConfigId[2]	IdReportConfig-A3		
}			
}			

Table 8.3.1.3a.3.3-3: ReportConfigEUTRA-A3-RSRQ (Table 8.3.1.3a.3.3-2)

Derivation Path: 36.508, Table 4.6.6-6			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerQuantity	rsrq		
si-RequestForHO-r9	Not present		
ue-RxTxTimeDiffPeriodical-r9	Not present		
}			

Table 8.3.1.3a.3.3-3a: *SystemInformationBlockType3* for Cell 1 (Step 3A, Table 6.1.2.18.3.2-2)

Derivation path: 36.508 table 4.4.3.3-2			
Information Element	**Value/Remark**	**Comment**	**Condition**
SystemInformationBlockType3 ::= SEQUENCE {			
lateNonCriticalExtension {			
q-QualMin-r9	-30 dB		
}			
}			

Table 8.3.1.3a.3.3-4: *MeasurementReport* (step 5, Table 8.3.1.3a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId	PhysicalCellIdentity of Cell 2		
cgi-Info	Not present		
measResult SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
additionalSI-Info-r9	Not present		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

Table 8.3.1.3a.3.3-5: *MeasurementReport* (step 7, Table 8.3.1.3a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId	PhysicalCellIdentity of Cell 3		
cgi-Info	Not present		
measResult SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
additionalSI-Info-r9	Not present		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

Table 8.3.1.3a.3.3-6: *Paging* (step 3A, Table 8.3.1.3a.3.2-2)

Derivation path: 36.508 Table 4.6.1-7			
Information Element	**Value/Remark**	**Comment**	**Condition**
Paging ::= SEQUENCE {			
pagingRecordList	Not present		
systemInfoModification	true		
}			

8.3.1.4 Measurement configuration control and reporting / Intra E-UTRAN measurements / Periodic reporting (intra and inter-frequency measurements)

8.3.1.4.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurement configured for periodic reporting of intra
frequency cells and inter frequency cells on specified frequency }
ensure that {
  when { The UE receives reference signal power for cells on the serving frequency and cells on the
frequency where measurements are configured }
    then { UE sends MeasurementReport message at regular intervals for these cells }
}
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and a MeasurementReport message for a configured periodic
measurement reporting of intra and inter frequency cells was sent }
ensure that {
  when { A previously reported cell become unavailable or the UE receives reference signal power on
a reported frequency for a cell which was previously not reported }
    then { UE sends MeasurementReport message at regular intervals for the available intra and inter
frequency cells }
```

```
}
```

(3)

```
with { UE in E-UTRA RRC_CONNECTED state and periodic measurement reporting ongoing}
ensure that {
  when { The UE receives a RRCConnectionReconfiguration message removing measIds for periodic
reporting }
   then { UE stops sending MeasurementReport messages for these measIds }
}
```

8.3.1.4.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.2.2, 5.5.4.1 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> If the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the Measurement configuration procedure as specified in 5.5.2;

...

[TS 36.331, clause 5.5.2.2]

The UE shall:

1> for each *measId* value included in the received *measIdToRemoveList* that is part of the current UE configuration in *varMeasConfig*:

2> remove the entry with the matching *measId* from the *measIdList* within the *VarMeasConfig*;

2> remove the measurement reporting entry for this *measId* from the *VarMeasReportList*, if included;

2> stop the periodical reporting timer or timer T321, whichever one is running, and reset the associated information (e.g. *timeToTrigger*) for this *measId*;

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

…

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

…

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

…

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

...

[TS 36.331, clause 5.5.5]

…

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measuredResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultsNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultsNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

…

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than to *reportAmount* as defined corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

...

1> submit the MEASUREMENT REPORT message to lower layers for transmission, upon which the procedure ends.

8.3.1.4.3 Test description

8.3.1.4.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 2, Cell 3, Cell 4 and Cell 6
- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) according to [18] on Cell 1.

8.3.1.4.3.2 Test procedure sequence

Table 8.3.1.4.3.2-1 illustrates the downlink power levels to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while rows marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.4.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 2 (DL only)	Cell 3 (DL only)	Cell 4 (DL only)	Cell 6 (DL only)	Remark
T0	Cell-specific RS EPRE	dBm/ 15kHz	-85	-91	-85	Off	Off	
T1	Cell-specific RS EPRE	dBm/ 15kHz	-85	Off	-85	-91	Off	
T2	Cell-specific RS EPRE	dBm/ 15kHz	-85	Off	Off	-91	-85	

Table 8.3.1.4.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup intra LTE measurements and periodical reporting for intra and inter frequency cells.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
2A	Wait and ignore *MeasurementReport* messages for 8 s to allow for the switching of the cells and UE to measure the neighbouring cells.	-	-	-	-
-	EXCEPTION: In parallel to events described in step 3 the steps specified in table 8.3.1.4.3.2-3, 8.3.1.4.3.2-4 and the table 8.3.1.4.3.2-4A shall take place				
3	Wait for 30 s to ensure that the UE performs a periodical intra frequency reporting and a periodical inter frequency reporting.	-	-	1	-
4	SS sets the cell-specific reference signal levels and switches Cell 2 “Off” and Cell 4 “On” according to row "T1" in table 8.3.1.4.3.2-1.	-	-	-	-
5	Wait and ignore *MeasurementReport* messages for 8 s to allow for the switching of cells and the UE measurement.	-	-	-	-
-	EXCEPTION: In parallel to events described in step 6 the steps specified in table 8.3.1.4.3.2-4, 8.3.1.4.3.2-4A and table 8.3.1.4.3.2-5 shall take place.				
6	Wait for 30 s to ensure that the UE performs a periodical intra frequency reporting and a periodical inter frequency reporting.	-	-	1, 2	-
7	SS sets the cell-specific reference signal levels and switches Cell 3 “Off” and Cell 6 ”On” according to row "T2" in table 8.3.1.4.3.2-1.	-	-	-	-
8	Wait and ignore *MeasurementReport* messages for 8 s to allow for the switching of cells and UE measurement.	-	-	-	-
-	EXCEPTION: In parallel to events described in steps 9 to 11 the steps specified in table 8.3.1.4.3.2-5 8.3.1.4.3.2-6 and the table 8.3.1.4.3.2-6A shall take place	-	-	-	-
9	Wait for 30 s to ensure that the UE performs a periodical intra frequency reporting and a periodical inter frequency reporting.	-	-	1, 2	-
10	SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to remove measIds for periodical reporting.	<--	*RRCConnectionReconfiguration*	-	-
11	The UE transmits an *RCConnectionReconfigrationComplete* message	-->	*RRCConnectionReconfigurationComplete*	-	-
12	Check: Does the UE attempt to transmit an uplink message for the next 10s?	-	-	3	F

Table 8.3.1.4.3.2-3: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: After the 1st message is received, step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical intra frequency reporting for Cell 2(NOTE1)?	-->	*MeasurementReport*	1	P

NOTE 1: In the first report UE may not include measResultNeighCells for cell 2.

Table 8.3.1.4.3.2-4: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: After the 1st message is received, step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical inter frequency reporting for Cell 3(NOTE2)?	-->	*MeasurementReport*	1	P

NOTE 2: In the first report UE may not include measResultNeighCells for the cell 3.

Table 8.3.1.4.3.2-4A: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: After the 1st message is received, step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical inter frequency reporting configured for cell 6 and without measResultNeighCells for the cell 6?	-->	*MeasurementReport*	1	P

Table 8.3.1.4.3.2-5: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: Step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical intra frequency reporting for Cell 4(NOTE3)?	-->	*MeasurementReport*	1, 2	P

NOTE 3: In the first report UE may not include measResultNeighCells for the cell 4.

Table 8.3.1.4.3.2-6: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: Step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.				
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical inter frequency reporting for Cell 6 (NOTE4)?	-->	*MeasurementReport*	1, 2	P

NOTE 4: In the first report UE may not include measResultNeighCells for the cell 6.

Table 8.3.1.4.3.2-6A: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: After the 1st message is received, step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical inter frequency reporting configured for cell 3 and without measResultNeighCells for the cell 3?	-->	*MeasurementReport*	-	-

8.3.1.4.3.3 Specific message contents

Table 8.3.1.4.3.3-1: *RRCConnectionReconfiguration* (step 1 and step 10, Table 8.3.1.4.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.4.3.3-2: *MeasConfig* (step 1, Table 8.3.1.4.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	3 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f2		
measObject[2]	MeasObjectEUTRA-GENERIC(f2)		
measObjectId[2]	IdMeasObject-f3		
measObject[2]	MeasObjectEUTRA-GENERIC(f3)		
}			
reportConfigToAddModiList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-PERIODICAL		
reportConfig[1]	ReportConfigEUTRA-PERIODICAL		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	3 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-PERIODICAL		
measId[2]	2		
measObjectId[2]	IdMeasObject-f2		
reportConfigId[2]	IdReportConfig-PERIODICAL		
measId[3]	3		
measObjectId[3]	IdMeasObject-f3		
reportConfigId[3]	IdReportConfig-PERIODICAL		
}			
}			

Table 8.3.1.4.3.3-3 Void

Table 8.3.1.4.3.3-4: *MeasConfig* (step 10, Table 8.3.1.4.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measIdToRemoveList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	3 entries		
MeasId[1]	1		
MeasId[2]	2		
MeasId[3]	3		
}			
}			

Table 8.3.1.4.3.3-5: *MeasurementReport* (step 1, Table 8.3.1.4.3.2-3)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 2	
physCellId [1]	physicalCellIdentity-Cell2		
measResult [1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.4.3.3-6: MeasurementReport (step 1, Table 8.3.1.4.3.2-5)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 4	
physCellId [1]	physicalCellIdentity-Cell4		
measResult [1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.4.3.3-7: *MeasurementReport* (step 1, Table 8.3.1.4.3.2-4)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 3	
physCellId [1]	physicalCellIdentity-Cell3		
measResult [1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.4.3.3-7A: *MeasurementReport* (step 1, Table 8.3.1.4.3.2-4A)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	3		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {}	Not present		
}			
}			
}			
}			
}			

Table 8.3.1.4.3.3-8: *MeasurementReport* (step 1, Table 8.3.1.4.3.2-6)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	3		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 6	
physCellId [1]	physicalCellIdentity-Cell6		
measResult [1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.4.3.3-9: *MeasurementReport* (step 1, Table 8.3.1.4.3.2-6A)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {}	Not present		
}			
}			
}			
}			
}			

8.3.1.5 Measurement configuration control and reporting / Intra E-UTRAN measurements / Two simultaneous event A3 (intra-frequency measurements)

8.3.1.5.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurements configured for two event A3 at the same
time}
ensure that {
  when { Entry condition for event A3 is not met }
   then { UE does not send MeasurementReport }
}
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and measurements configured for two event A3 at the same
time}
ensure that {
  when { Neighbour becomes offset better than serving }
   then { UE sends MeasurementReport with correct measId for event A3 }
}
```

8.3.1.5.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.4.1, 5.5.4.4 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> If the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the Measurement configuration procedure as specified in 5.5.2;

...

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the corresponding *reportConfig* includes a purpose set to '*reportStrongestCellsForSON*':

3> consider any neighbouring cell detected on the associated frequency to be applicable;

2> else if the corresponding *reportConfig* includes a purpose set to '*reportCGI*':

3> consider any neighbouring cell detected on the associated frequency/ set of frequencies (GERAN) which has a physical cell identity matching the value of the *cellForWhichToReportCGI* included in the corresponding *measObject* within the *VarMeasConfig* to be applicable;

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the *VarMeasConfig* for this *measId*;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *purpose is* included and set to '*reportCGI*' and if the UE acquired the information needed to set all fields of *cellGlobalId* for the requested cell:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> stop timer T321;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> upon expiry of the T321 for this *measId*:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

NOTE 3: If the UE is configured with DRX, the UE may delay the measurement reporting for event triggered and periodical triggered measurements until the Active Time, which is defined in TS 36.321 [6].

[TS 36.331, clause 5.5.4.4]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A3-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A3-2, as specified below, is fulfilled;

Inequality A3-1 (Entering condition)

$$Mn + Ofn + Ocn - Hys > Ms + Ofs + Ocs + Off$$

Inequality A3-2 (Leaving condition)

$$Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off$$

The variables in the formula are defined as follows:

Mn is the measurement result of the neighbouring cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the neighbour cell (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell).

Ocn is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.

Ms is the measurement result of the serving cell, not taking into account any offsets.

Ofs is the frequency specific offset of the serving frequency (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the serving frequency).

Ocs is the cell specific offset of the serving cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the serving frequency), and is set to zero if not configured for the serving cell.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Off is the offset parameter for this event (i.e. *a3-Offset* as defined within *reportConfigEUTRA* for this event).

Mn, Ms are expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Ofn, Ocn, Ofs, Ocs, Hys, Off are expressed in dB.

[TS 36.331, clause 5.5.5]

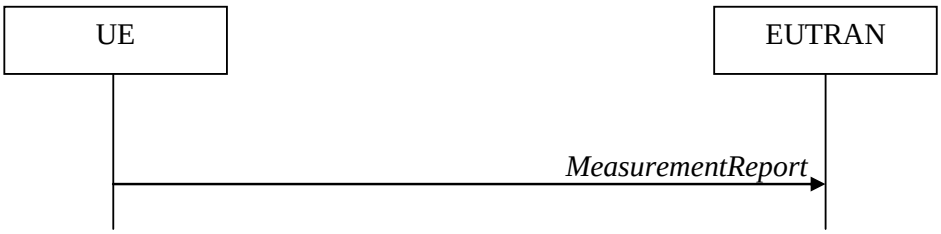

Figure 5.5.5-1: Measurement reporting

The purpose of this procedure is to transfer measurement results from the UE to E-UTRAN.

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of decreasing quantity, i.e. the best cell is included first;

3> else if the *purpose* is set to '*reportCGI*':

4> if the mandatory present fields of the *cellGlobalId* for the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* have been obtained:

5> include the *cgi-Info* containing all the fields that have been successfully acquired;

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

1> else:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasReportList* for this *measId*;

3> remove this *measId* from the *measIdList* within *VarMeasConfig*;

1> if the measured results are for CDMA2000 HRPD:

2> set the *preRegistrationStatusHRPD* to the UE's CDMA2000 upper layer's HRPD *preRegistrationStatus*;

1> if the measured results are for CDMA2000 1xRTT:

2> set the *preRegistrationStatusHRPD* to '*FALSE*';

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.1.5.3 Test description

8.3.1.5.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 2

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18]

8.3.1.5.3.2 Test procedure sequence

Table 8.3.1.5.3.2-1 illustrates the downlink power levels to be applied for Cell 1 and Cell 2 at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while rows marked "T1"and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.5.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 2 (DL only)	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	-110	Power levels are such that entry condition for event A3 (*measId* 1 & 2) is not satisfied: $Mn+Ofn+Ocn+Hys < Ms+Ofs+Ocs+Off$
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-91	Power levels are such that entry condition for event A3 (*measId* 1) is satisfied: $Mn+Ofn+Ocn-Hys > Ms+Ofs+Ocs+Off$
T2	Cell-specific RS EPRE	dBm/15kHz	-85	-79	Power levels are such that entry condition for event A3 (*measId* 2) is satisfied: $Mn+Ofn+Ocn-Hys > Ms+Ofs+Ocs+Off$

Table 8.3.1.5.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including *MeasConfig* to setup intra E-UTRAN measurement and reporting for two event A3 (*measId* 1 and *measId* 2) with different parameters.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE transmit a *MeasurementReport* message within the next 10s?	-->	*MeasurementReport*	1	F
4	SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.5.3.2-1.	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message to report event A3 (*measId* 1) with the measured RSRP value for Cell 2?	-->	*MeasurementReport*	2	P
6	SS re-adjusts the cell-specific reference signal level according to row "T2" in table 8.3.1.5.3.2-1.	-	-	-	-
7	Check: Does the UE transmit a *MeasurementReport* message to report event A3 (measId 2) with the measured RSRP value for Cell 2?	-->	*MeasurementReport*	2	P

8.3.1.5.3.3 Specific message contents

Table 8.3.1.5.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.5.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.5.3.3-2: *MeasConfig* (step 1, Table 8.3.1.5.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	Value/Remark	Comment	Condition
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	2 entries		
reportConfigId[1]	1		
reportConfig[1]	ReportConfig-A3-Lowerthreshold		
reportConfigId[2]	2		
reportConfig[2]	ReportConfig-A3-Higherthreshold		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3-Lowerthreshold		
measId[2]	2		
measObjectId[2]	IdMeasObject-f1		
reportConfigId[2]	IdReportConfig-A3-Higherthreshold		
}			
}			

Table 8.3.1.5.3.3-3: *ReportConfig-A3-Lowerthreshold* (step 1, Table 8.3.1.5.3.2-2)

Derivation path: 36.508 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	-20	-10 dB	
}			
}			
timeToTrigger	ms0		
}			
}			
reportQuantity	sameAsTriggerQuantity		
}			

Table 8.3.1.5.3.3-4: *ReportConfig-A3-Higherthreshold* (step 1, Table 8.3.1.5.3.2-2)

Derivation path: 36.508 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	
}			
}			
timeToTrigger	ms0		
}			
}			
reportQuantity	sameAsTriggerQuantity		
}			

Table 8.3.1.5.3.3-5: MeasurementReport (step 5, Table 8.3.1.5.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
MeasResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
MeasResultEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 2	
physCellId	PhysCellId of the Cell 2.		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.5.3.3-6: *MeasurementReport* (step 7, Table 8.3.1.5.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
MeasResults ::= SEQUENCE {			
measId	2		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
MeasResultEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 2	
physCellId	PhysCellId of the Cell 2.		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
}			
}			
}			
}			

8.3.1.6 Measurement configuration control and reporting / Intra E-UTRAN measurements / Two simultaneous events A2 and A3 (inter-frequency measurements)

8.3.1.6.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurements configured for event A2 and event A3 }
ensure that {
  when { Serving becomes worse than threshold }
   then { UE sends MeasurementReport for event A2 }
}
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and measurements configured for event A2 and event A3 }
ensure that {
  when { Neighbour becomes offset better than serving }
   then { UE sends MeasurementReport for event A3 }
}
```

8.3.1.6.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.4.1, 5.5.4.3, 5.5.4.4 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

...

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> if the *ue-RxTxTimeDiffPeriodical*, *eventA1* or *eventA2* is configured in the corresponding *reportConfig*:

5> consider only the serving cell to be applicable;

4> else:

5> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

…

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *purpose is* included and set to '*reportCGI*' and if the UE acquired the information needed to set all fields of *cgi-Info* for the requested cell:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> stop timer T321;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> upon expiry of the T321 for this *measId*:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

NOTE 3: If the UE is configured with DRX, the UE may delay the measurement reporting for event triggered and periodical triggered measurements until the Active Time, which is defined in TS 36.321 [6].

[TS 36.331, clause 5.5.4.3]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A2-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A2-2, as specified below, is fulfilled;

Inequality A2-1 (Entering condition)

$Ms + Hys < Thresh$

Inequality A2-2 (Leaving condition)

$Ms - Hys > Thresh$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any offsets.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Thresh is the threshold parameter for this event (i.e. *a2-Threshold* as defined within *reportConfigEUTRA* for this event).

Ms is expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Hys is expressed in dB.

Thresh is expressed in the same unit as ***Ms***.

[TS 36.331, clause 5.5.4.4]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A3-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A3-2, as specified below, is fulfilled;

Inequality A3-1 (Entering condition)

$$Mn + Ofn + Ocn - Hys > Ms + Ofs + Ocs + Off$$

Inequality A3-2 (Leaving condition)

$$Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off$$

The variables in the formula are defined as follows:

Mn is the measurement result of the neighbouring cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the neighbour cell (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell).

Ocn is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.

Ms is the measurement result of the serving cell, not taking into account any offsets.

Ofs is the frequency specific offset of the serving frequency (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the serving frequency).

Ocs is the cell specific offset of the serving cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the serving frequency), and is set to zero if not configured for the serving cell.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Off is the offset parameter for this event (i.e. *a3-Offset* as defined within *reportConfigEUTRA* for this event).

Mn, Ms are expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Ofn, Ocn, Ofs, Ocs, Hys, Off are expressed in dB.

[TS 36.331, clause 5.5.5]

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of either decreasing quantity for UTRA and GERAN or increasing quantity for CDMA2000 *pilotStrength*, i.e. the best cell is included first;

…

…

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

…

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.1.6.3 Test description

8.3.1.6.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 3
- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.6.3.2 Test procedure sequence

Table 8.3.1.6.3.2-1 illustrates the downlink power levels to be applied for Cell 1 and Cell 3 at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while rows marked "T1"and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.6.3.2-1 : Power levels

	Parameter	Unit	Cell 1	Cell 3 (DL only)	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-75	-91	Power levels are such that entry condition for event A2 and event A3 is not satisfied: $Ms - Hys > Thresh$ AND $Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off$
T1	Cell-specific RS EPRE	dBm/15kHz	-93	-105	Power level of Cell 1 is such that entry condition for event A2 is satisfied: $Ms + Hys < Thresh$ AND Power levels of Cell 1 and Cell 3 are such that entry condition for event A3 is not satisfied: $Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off$
T2	Cell-specific RS EPRE	dBm/15kHz	-85	-73	Power levels are such that entry condition for event A3 is satisfied: $Mn + Ofn + Ocn - Hys > Ms + Ofs + Ocs + Off$

Table 8.3.1.6.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup intra LTE measurement and reporting for event A2 and event A3 (inter frequency measurement)	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigrationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE transmit a *MeasurementReport* message within the next 10s?	-->	*MeasurementReport*	1	F
4	SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.6.32.-1.	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message to report event A2 with the measured RSRP value for Cell 1?	-->	*MeasurementReport*	1	P
6	SS re-adjusts the cell-specific reference signal level according to row "T2" in table 8.3.1.6.32.-1.	-	-	-	-
7	Check: Does the UE transmit a *MeasurementReport* message to report event A3 with the measured RSRP value for Cell 3?	-->	*MeasurementReport*	2	P

8.3.1.6.3.3 Specific message contents

Table 8.3.1.6.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.6.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.6.3.3-2: *MeasConfig* (step 1, Table 8.3.1.6.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1, condition INTER-FREQ			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f2		
measObject[2]	MeasObjectEUTRA-GENERIC(f2)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	2 entries		
reportConfigId[1]	IdReportConfig-A2		
reportConfig[1]	ReportConfig-A2		
reportConfigId[2]	IdReportConfig-A3		
reportConfig[2]	ReportConfig-A3		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A2		
measId[2]	2		
measObjectId[2]	IdMeasObject-f2		
reportConfigId[2]	IdReportConfig-A3		
}			
}			

Table 8.3.1.6.3.3-3: *ReportConfig-A2* (step 1, Table 8.3.1.6.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-5 ReportConfigEUTRA-A2(-83)			
Information Element	**Value/Remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
hysteresis	6	3 dB	
}			
}			
}			

Table 8.3.1.6.3.3-4: *ReportConfig-A3* (step 1, Table 8.3.1.6.3.2-2)

Derivation path: 36.508 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	
}			
}			
}			
}			
reportQuantity	sameAsTriggerQuantity		
}			

Table 8.3.1.6.3.3-5: *MeasurementReport* (step 5, Table 8.3.1.6.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			

Table 8.3.1.6.3.3-6: *MeasurementReport* (step 7, Table 8.3.1.6.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 3	
physCellId	PhysCellId of the Cell 3.		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
}			
}			
}			
}			

8.3.1.7 Measurement configuration control and reporting / Intra E-UTRAN measurements / Blacklisting

8.3.1.7.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurement configured for event A3 reporting }
ensure that {
  when { Blacklisted neighbour cell satisfies entry condition for event A3 }
   then { It is not considered in event evaluation and UE does not send MeasurementReport message }
}
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and measurement reporting triggered by event A3 is ongoing}
ensure that {
  when { Blacklisted neighbour cell satisfies entry condition for event A3 }
   then { It is not considered in measurement reporting }
}
```

8.3.1.7.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.5.1, 5.5.4.1, and 5.5.5.

[TS 36.331, clause 5.5.1]

The UE reports measurement information in accordance with the measurement configuration as provided by E-UTRAN. E-UTRAN provides the measurement configuration applicable for a UE in RRC_CONNECTED state by means of dedicated signalling, i.e. using the *RRCConnectionReconfiguration* message.

...

- For intra-frequency and inter-frequency measurements a measurement object is a single E-UTRA carrier frequency. Associated with this carrier frequency, E-UTRAN can configure a list of cell specific offsets and a list of 'blacklisted' cells. Blacklisted cells are not considered in event evaluation or measurement reporting.

...

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

…

2> else:

3> if the corresponding *measObject* concerns EUTRA:

4> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

…

2> if the *triggerType* is set to 'event' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeaConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* while the *VarMeasReportList* does not include a measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to 'event' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering

taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to 'event' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the V*arMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the V*arMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

…

[TS 36.331, clause 5.5.5]

…

For the measId for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the IE *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultsNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

…

3> for each cell that is included in the *measResultsNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell include the layer 3 filtered measured results in accordance with the *reportConfigList* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

...

1> increment the *numberOfReportsSent* as defined within the V*arMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

…

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends.

8.3.1.7.3 Test description

8.3.1.7.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 2 and Cell 4:
  - Cell 1 is the serving cell
  - Cell 2 and Cell 4 are intra-frequency neighbour cells

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) according to [18].

8.3.1.7.3.2 Test procedure sequence

Table 8.3.1.7.3.2-1 illustrates the downlink power levels to be applied for Cell 1, Cell 2 and Cell 4 at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while rows marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.7.3.2-1 : Power level

	Parameter	Unit	Cell 1	Cell 2 (DL only)	Cell 4 (DL only)	Remark
T0			-85	-97	-97	Power levels are such that that exit condition for event A3 is satisfied for all cells (*M2 + Hys < M1 + Off and M4 + Hys < M1 + Off*) with all offset parameters set to 0 dB.
T1	Cell-specific RS EPRE	dBm/ 15kHz	-85	-79	-97	Power level of Cell 2 is set such that measurement results for Cell 1 (*M1*) and Cell 2 (*M2*) satisfy entry condition for event A3 (*M2 - Hys > M1 + Off*).
T2			-85	-79	-79	Power level of Cell 4 is set such that measurement results for Cell 1 (*M1*) and Cell 4 (*M4*) satisfy entry condition for event A3 (*M4 - Hys > M1 + Off*).

Table 8.3.1.7.3.2-2 : Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup intraLTE measurement and reporting for event A3.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigrationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	SS re-adjusts the cell-specific reference signal levels according to row "T1" in table 8.3.1.7.3.2.-1.	-	-	-	-
4	Check: does the UE transmit a *MeasurementReport* messages within the next 10s?	-	*MeasurementReport*	1	F
5	SS re-adjusts the cell-specific reference signal levels according to row "T2" in table 8.3.1.7.3.2.-1.	-	-	-	-
6	Check: does the UE transmit a *MeasurementReport* message to report event A3 with the measured RSRP values for Cell 1 and Cell 4 without Cell 2 results?	-->	*MeasurementReport*	2	P
7	SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to remove Cell 2 from the blacklisted cell list.	<--	*RRCConnectionReconfiguration*	-	-
8	The UE transmits an *RRCConnectionReconfigrationComplete* message	-->	*RRCConnectionReconfigurationComplete*	-	-
-	EXCEPTION: Steps 8Aa1 to 8Ab1 describe a transaction that depends on the UE behaviour; the "lower case letter" identifies a step sequence that takes place if a specific behaviour happens.	-	-	-	-
8Aa1	IF the UE detects event A3 for Cell 4 before event A3 for Cell 2 THEN the UE may transmit *MeasurementReport* message to report event A3 with the measured RSRP values for Cell 1 and Cell 4.	-->	*MeasurementReport*	-	-
8Ab1	IF the UE detects event A3 for Cell 2 before event A3 for Cell 4 THEN the UE may transmit *MeasurementReport* message to report event A3 with the measured RSRP values for Cell 1 and Cell 2.	-->	*MeasurementReport*	-	-
9	Check: does the UE transmit a *MeasurementReport* message to report event A3 with the measured RSRP values for Cell 1, Cell 2 and Cell 4?	-->	*MeasurementReport*	1, 2	P

8.3.1.7.3.3 Specific message contents

Table 8.3.1.7.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.7.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.7.3.3-2: *MeasConfig* (Table 8.3.1.7.3.3-1)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
measConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfig-A3		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

Table 8.3.1.7.3.3-3; *MeasObjectEUTRA-GENERIC* (Table 8.3.1.7.3.3-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-3 MeasObjectEUTRA-GENERIC(f1)			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-GENERIC(f1) ::= SEQUENCE {			
blackCellsToAddModList ::= SEQUENCE (SIZE (1..maxCellMeas)) OF SEQUENCE {	1 entry	Add Cell 2	
cellIndex[1]	1		
physCellIdRange[1]	physicalCellIdentity-Cell2		
}			
}			

Table 8.3.1.7.3.3-4: *ReportConfig-A3* (Table 8.3.1.7.3.3-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
maxReportCells	3	Report Cell 1, Cell 2 and Cell 4	
reportInterval	Not present		
}			

Table 8.3.1.7.3.3-5: *RRCConnectionReconfiguration* (step 7, Table 8.3.1.7.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.7.3.3-6: *MeasConfig* (Table 8.3.1.7.3.3-5)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
measConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
}			
}			

Table 8.3.1.7.3.3-7: *MeasObjectEUTRA-GENERIC* (Table 8.3.1.7.3.3-6)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-3 MeasObjectEUTRA-GENERIC(f1)			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-GENERIC(f1) ::= SEQUENCE {			
blackCellsToRemoveList ::= SEQUENCE (SIZE (1..maxCellMeas)) OF SEQUENCE {	1 entry	Remove Cell 2	
CellIndex[1]	1		
}			
}			

Table 8.3.1.7.3.3-8: *MeasurementReport* (step 6, Table 8.3.1.7.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 4	
physCellId [1]	physicalCellIdentity-Cell4		
measResult [1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.7.3.3-9: *MeasurementReport* (step 9, Table 8.3.1.7.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 2 and Cell 4	
physCellId [1]	physicalCellIdentity-Cell2		
measResult [1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
physCellId[2]	physicalCellIdentity-Cell4		
measResult [2] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
Note: IE “measresult” for cells 2 and 4 can appear in any order (i.e. cell 2 then cell 4 or cell 4 then cell 2)			

Table 8.3.1.7.3.3-10: *MeasurementReport* (step 8Aa1, Table 8.3.1.7.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 4	
physCellId[2]	physicalCellIdentity-Cell4		
measResult [2] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.7.3.3-11: *MeasurementReport* (step 8Ab1, Table 8.3.1.7.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 2	
physCellId[2]	physicalCellIdentity-Cell2		
measResult [2] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			

8.3.1.8 Measurement configuration control and reporting / Intra E-UTRAN measurements / Handover / IE measurement configuration present

8.3.1.8.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the intra frequency measurement }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo and a
measConfig for removing intra frequency measurement }
    then { UE performs intra frequency handover and stops the intra frequency measurement }
           }
```

8.3.1.8.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.5.4, 5.5.2.2, 5.5.2.6 and 5.5.4.4.

[TS 36.331, clause 5.3.5.4]

If the *RRCConnectionReconfiguration* message includes the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

1> stop timer T310, if running;

1> start timer T304 with the timer value set to *t304*, as included in the *mobilityControlInfo*;

1> if the *carrierFreq* is included:

2> consider the target cell to be one on the frequency indicated by the *carrierFreq* with a physical cell identity indicated by the *targetPhysCellId*;

1> else:

2> consider the target cell to be one on the current frequency with a physical cell identity indicated by the *targetPhysCellId*;

1> start synchronising to the DL of the target cell;

NOTE 1: The UE should perform the handover as soon as possible following the reception of the RRC message triggering the handover, which could be before confirming successful reception (HARQ and ARQ) of this message.

1> reset MAC;

1> re-establish PDCP for all RBs that are established;

NOTE 2: The handling of the radio bearers after the successful completion of the PDCP re-establishment, e.g. the re-transmission of unacknowledged PDCP SDUs (as well as the associated status reporting), the handling of the SN and the HFN, is specified in TS 36.323 [8].

1> re-establish RLC for all RBs that are established;

1> apply the value of the *newUE-Identity* as the C-RNTI;

1> configure lower layers in accordance with the received *radioResourceConfigCommon*;

1> configure lower layers in accordance with any additional fields, not covered in the previous, if included in the received *mobilityControlInfo*;

1> if the *RRCConnectionReconfiguration* message includes the *radioResourceConfigDedicated*:

2> perform the radio resource configuration procedure as specified in 5.3.10;

1> if the *keyChangeIndicator* received in the *securityConfigHO* is set to *TRUE*:

2> update the K_{eNB} key based on the fresh K_{ASME} key taken into use with the previous successful NAS SMC procedure, as specified in TS 33.401 [32];

1> else:

2> update the K_{eNB} key based on the current K_{eNB} or the NH, using the *nextHopChainingCount* value indicated in the *securityConfigHO*, as specified in TS 33.401 [32];

1> store the *nextHopChainingCount* value;

1> if the *securityAlgorithmConfig* is included in the *securityConfigHO*:

2> derive the K_{RRCint} key associated with the *integrityProtAlgorithm*, as specified in TS 33.401 [32];

2> derive the K_{RRCenc} key and the K_{UPenc} key associated with the *cipheringAlgorithm*, as specified in TS 33.401 [32];

1> else:

2> derive the K_{RRCint} key associated with the current integrity algorithm, as specified in TS 33.401 [32];

2> derive the K_{RRCenc} key and the K_{UPenc} key associated with the current ciphering algorithm, as specified in TS 33.401 [32];

1> configure lower layers to apply the integrity protection algorithm and the K_{RRCint} key, i.e. the integrity protection configuration shall be applied to all subsequent messages received and sent by the UE, including the message used to indicate the successful completion of the procedure;

1> configure lower layers to apply the ciphering algorithm, the K_{RRCenc} key and the K_{UPenc} key, i.e. the ciphering configuration shall be applied to all subsequent messages received and sent by the UE, including the message used to indicate the successful completion of the procedure;

1> perform the measurement related actions as specified in 5.5.6.1;

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

1> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission;

1> if MAC successfully completes the random access procedure:

2> stop timer T304;

2> apply the parts of the CQI reporting configuration, the scheduling request configuration and the sounding RS configuration that do not require the UE to know the SFN of the target cell, if any;

2> apply the parts of the measurement and the radio resource configuration that require the UE to know the SFN of the target cell (e.g. measurement gaps, periodic CQI reporting, scheduling request configuration, sounding RS configuration), if any, upon acquiring the SFN of the target cell;

NOTE 3: Whenever the UE shall setup or reconfigure a configuration in accordance with a field that is received it applies the new configuration, except for the cases addressed by the above statements.

2> the procedure ends;

…

[TS 36.331, clause 5.5.2.2]

The UE shall:

1> for each *measId* included in the received *measIdToRemoveList* that is part of the current UE configuration in *varMeasConfig*:

2> remove the entry with the matching *measId* from the *measIdList* within the *VarMeasConfig*;

2> remove the measurement reporting entry for this *measId* from the *VarMeasReportList*, if included;

…

[TS 36.331, clause 5.5.2.6]

The UE shall:

1> for each *reportConfigId* included in the received *reportConfigToRemoveList* that is part of the current UE configuration in *varMeasConfig*:

2> remove the entry with the matching *reportConfigId* from the *reportConfigList* within the *VarMeasConfig*;

2> remove all *measId* associated with the *reportConfigId* from the *measIdList* within the *VarMeasConfig*, if any;

2> if a *measId* is removed from the *measIdList:*

3> remove the measurement reporting entry for this *measId* from the *VarMeasReportList, if included*;

3> stop the periodical reporting timer or timer T321, whichever one is running, and reset the associated information (e.g. *timeToTrigger*) for this *measId*;

NOTE: The UE does not consider the message as erroneous if the *reportConfigToRemoveList* includes any *reportConfigId* value that is not part of the current UE configuration.

[TS 36.331, clause 5.5.4.4]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A3-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A3-2, as specified below, is fulfilled;

Inequality A3-1 (Entering condition)

$$Mn + Ofn + Ocn - Hys > Ms + Ofs + Ocs + Off$$

Inequality A3-2 (Leaving condition)

$$Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off$$

The variables in the formula are defined as follows:

Mn is the measurement result of the neighbouring cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the neighbour cell (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell).

Ocn is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.

Ms is the measurement result of the serving cell, not taking into account any offsets.

Ofs is the frequency specific offset of the serving frequency (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the serving frequency).

Ocs is the cell specific offset of the serving cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the serving frequency), and is set to zero if not configured for the serving cell.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Off is the offset parameter for this event (i.e. *a3-Offset* as defined within *reportConfigEUTRA* for this event).

Mn, Ms are expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Ofn, Ocn, Ofs, Ocs, Hys, Off are expressed in dB.

8.3.1.8.3 Test description

8.3.1.8.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 2.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.8.3.2 Test procedure sequence

Table 8.3.1.8.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.8.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 2	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	-91	The power level values are such that measurement re85sults for Cell 1 (M1) and Cell 2 (M2) satisfy exit condition for event A3 (M2 < M1).
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-79	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M2 > M1).

Table 8.3.1.8.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to setup intra frequency measurement.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1 to confirm the setup of intra frequency measurement.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 1 and Cell 2 parameters according to the row "T1" in table 8.3.1.8.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message with a *measConfig* on Cell 1 for removing event A3 reporting, to order the UE to perform intra frequency handover to Cell 2.	<--	*RRCConnectionReconfiguration*	-	-
6	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 2?	-->	*RRCConnectionReconfigurationComplete*	1	P
7	The SS changes Cell 1 and Cell 2 parameters according to the row "T0" in table 8.3.1.8.3.2-1.	-	-	-	-
8	Check: Does the UE transmit a *MeasurementReport* message on Cell 2 to perform event A3 reporting during the next 30s?	-->	*MeasurementReport*	1	F
9	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicate that the UE is in E-UTRA RRC_CONNECTED state on Cell 2?	-	-	1	-

8.3.1.8.3.3 Specific message contents

Table 8.3.1.8.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.8.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.1.8.3.3-2: *MeasConfig* (Table 8.3.1.8.3.3-1)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfigEUTRA-A3		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

Table 8.3.1.8.3.3-3: *MeasurementReport* (step 4, Table 8.3.1.8.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 2		
cgi-Info[1]	Not present		
measResult SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.8.3.3-4: *RRCConnectionReconfiguration* (step 5, Table 8.3.1.8.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition HO and MEAS

Table 8.3.1.8.3.3-5: *MeasConfig* (Table 8.3.1.8.3.3-4)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToRemoveList SEQUENCE (SIZE (1.. maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f1		
}			
reportConfigToRemoveList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
}			
measIdToRemoveList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
}			
}			

Table 8.3.1.8.3.3-6: *MobilityControlInfo* (Table 8.3.1.8.3.3-4)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 2		
carrierFreq	Not present		
}			

8.3.1.9 Measurement configuration control and reporting / Intra E-UTRAN measurements / Intra-frequency handover / IE measurement configuration not present

8.3.1.9.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the intra frequency measurement }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo and not
including a measConfig }
    then { UE performs intra frequency handover and continues the intra frequency measurement }
          }
```

(2)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter frequency measurement }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo and not
including a measConfig }
    then { UE performs intra frequency handover and continues the inter frequency measurement after
the activation of the measurement gaps }
          }
```

8.3.1.9.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.5.4.4 and 5.5.6.1.

[TS 36.331, clause 5.5.4.4]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A3-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A3-2, as specified below, is fulfilled;

Inequality A3-1 (Entering condition)

$$Mn + Ofn + Ocn - Hys > Ms + Ofs + Ocs + Off$$

Inequality A3-2 (Leaving condition)

$$Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off$$

The variables in the formula are defined as follows:

Mn is the measurement result of the neighbouring cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the neighbour cell (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell).

Ocn is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.

Ms is the measurement result of the serving cell, not taking into account any offsets.

Ofs is the frequency specific offset of the serving frequency (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the serving frequency).

Ocs is the cell specific offset of the serving cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the serving frequency), and is set to zero if not configured for the serving cell.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Off is the offset parameter for this event (i.e. *a3-Offset* as defined within *reportConfigEUTRA* for this event).

Mn, Ms are expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Ofn, Ocn, Ofs, Ocs, Hys, Off are expressed in dB.

[TS 36.331, clause 5.5.6.1]

E-UTRAN applies the handover procedure as follows:

- when performing the handover procedure, as specified in 5.3.5.4, ensure that a *measObjectId* corresponding to the handover target carrier frequency is configured as a result of the procedures described in this sub-clause and in 5.3.5.4;

...

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *triggerType* is set to '*periodical*':

3> remove this *measId* from the *measIdList* within *VarMeasConfig*:

1> if the procedure was triggered due to inter-frequency handover or successful re-establishment to an inter-frequency cell, update the *measId* values in the *measIdList* within *VarMeasConfig* as follows:

2> if a *measObjectId* value corresponding to the target carrier frequency exists in the *measObjectList* within *VarMeasConfig*:

3> for each *measId* value in the *measIdList*:

4> if the *measId* value is linked to the *measObjectId* value corresponding to the source carrier frequency:

5> link this *measId* value to the *measObjectId* value corresponding to the target carrier frequency;

4> else if the *measId* value is linked to the *measObjectId* value corresponding to the target carrier frequency:

5> link this *measId* value to the *measObjectId* value corresponding to the source carrier frequency;

2> else:

3> remove all *measId* values that are linked to the *measObjectId* value corresponding to the source carrier frequency;

1> remove all measurement reporting entries within *VarMeasReportList*;

1> reset the periodical reporting timer or timer T321, whichever one is running, as well as associated information (e.g. *timeToTrigger*) for all *measId*;

1> release the measurement gaps, if activated;

NOTE: If the UE requires measurement gaps to perform inter-frequency or inter-RAT measurements, the UE resumes the inter-frequency and inter-RAT measurements after the E-UTRAN has setup the measurement gaps.

8.3.1.9.3 Test description

8.3.1.9.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 2 and Cell 3.
- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.9.3.2 Test procedure sequence

Table 8.3.1.9.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1", "T2","T3" and "T4" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.9.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 2	Cell 3 (DL only)	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	"Off"	-97	The power level values are such that measurement results for Cell 1 (M1) and Cell 3 (M3) do not satisfy entry condition for event A3 (M3 < M1). (NOTE 1)
T1	Cell-specific RS EPRE	dBm/15kHz	-85	"Off"	-73	The power level values are such that measurement results for Cell 1 (M1) and Cell 3 (M3) satisfy entry condition for event A3 (M3 > M1). (NOTE 1)
T2	Cell-specific RS EPRE	dBm/15kHz	-85	-79	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M2 > M1). (NOTE 1)
T3	Cell-specific RS EPRE	dBm/15kHz	"Off"	-85	-73	The power level values are such that measurement results for Cell 2 (M2) and Cell 3 (M3) satisfy entry condition for event A3 (M3 > M2). (NOTE 1)
T4	Cell-specific RS EPRE	dBm/15kHz	-79	-85	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M1 > M2). (NOTE 1)
NOTE 1: Power level "Off" is defined in TS36.508 Table 6.2.2.1-1.						

Table 8.3.1.9.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup intra and inter frequency measurements on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the setup of intra and inter frequency measurements on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
-	EXCEPTION: Steps 3a1 to 3a2 describe behaviour that depends on the UE capability; the "lower case letter" identifies a step sequence that takes place if a capability is supported.	-	-	-	-
3a1	IF pc_FeatrGrp_25 THEN the SS changes Cell 1, Cell 2 and Cell 3 parameters according to the row "T1" in table 8.3.1.9.3.2-1.	-	-	-	-
3a2	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 for Cell 3.	-->	*MeasurementReport*	-	-
4	The SS changes Cell 1, Cell 2 and Cell 3 parameters according to the row "T2" in table 8.3.1.9.3.2-1.	-	-	-	-
5	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 for Cell 2.	-->	*MeasurementReport*	-	-
6	The SS transmits an *RRCConnectionReconfiguration* message without a measConfig message on Cell 1, to order the UE to perform intra frequency handover to Cell 2.	<--	*RRCConnectionReconfiguration*	-	-
7	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 2?	-->	*RRCConnectionReconfigurationComplete*	1	P
-	EXCEPTION: Steps 8a1 to 8a4 describe behaviour that depends on the UE capability; the "lower case letter" identifies a step sequence that takes place if a capability is supported.	-	-	-	-
8a1	IF pc_FeatrGrp_25 THEN the SS transmits an *RRCConnectionReconfiguration* message to activate the measurement gaps on Cell 2.	<--	*RRCConnectionReconfiguration*	-	-
8a2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the activation of the measurement gaps on Cell 2.	-->	*RRCConnectionReconfigurationComplete*	-	-
8a3	The SS changes Cell 1, Cell 2 and Cell 3 parameters according to the row "T3" in table 8.3.1.9.3.2-1.	-	-	-	-
8a4	Check: Does the UE transmit a *MeasurementReport* message on Cell 2 to report event A3 for Cell 3?	-->	*MeasurementReport*	2	P
9	The SS changes Cell 1, Cell 2 and Cell 3 parameters according to the row "T4" in table 8.3.1.9.3.2-1.	-	-	-	-
10	Check: Does the UE transmit a *MeasurementReport* message on Cell 2 to report event A3 for Cell 1?	-->	*MeasurementReport*	1	P
11	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicate that the UE is in E-UTRA RRC_CONNECTED state on Cell 2?	-	-	1,2	-

8.3.1.9.3.3 Specific message contents

Table 8.3.1.9.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.9.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.1.9.3.3-2: *MeasConfig* (Table 8.3.1.9.3.3-1)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1entry or 2 entries	number of entry depending on the UE capability	
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f2		pc_FeatrGrp_25
measObject[2]	MeasObjectEUTRA-GENERIC(f2)		pc_FeatrGrp_25
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfigEUTRA-A3		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1entry or 2 entries	number of entry depending on the UE capability	
measId[1]	1	Intra frequency	
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3		
measId[2]	2	Inter frequency	pc_FeatrGrp_25
measObjectId[2]	IdMeasObject-f2		pc_FeatrGrp_25
reportConfigId[2]	IdReportConfig-A3		pc_FeatrGrp_25
}			
}			

Table 8.3.1.9.3.3-3: *MeasurementReport* (step 3a2 and 8a4, Table 8.3.1.9.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 3		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.9.3.3-4: *MeasurementReport* (step 5, Table 8.3.1.9.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 2		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			

Table 8.3.1.9.3.3-5: *RRCConnectionReconfiguration* (step 6, Table 8.3.1.9.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition HO

Table 8.3.1.9.3.3-6: *MobilityControlInfo* (Table 8.1.3.9.3.3-5)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 2		
carrierFreq	Not present		
}			

Table 8.3.1.9.3.3-7: *RRCConnectionReconfiguration* (step 8a1, Table 8.3.1.9.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.1.9.3.3-8: *MeasConfig* (Table 8.1.3.9.3.3-7)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ

Table 8.3.1.9.3.3-9: *MeasurementReport* (step 10, Table 8.3.1.9.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 1		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

8.3.1.9a Measurement configuration control and reporting / Intra Frequency measurements / Intra-frequency handover / IE measurement configuration not present / Single Frequency operation

8.3.1.9a.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the intra frequency measurement }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo and not
including a measConfig }
    then { UE performs intra frequency handover and continues the intra frequency measurement }
           }
           }
```

8.3.1.9a.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.5.4.4 and 5.5.6.1.

[TS 36.331, clause 5.5.4.4]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A3-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A3-2, as specified below, is fulfilled;

Inequality A3-1 (Entering condition)

$$Mn + Ofn + Ocn - Hys > Ms + Ofs + Ocs + Off$$

Inequality A3-2 (Leaving condition)

$$Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off$$

The variables in the formula are defined as follows:

Mn is the measurement result of the neighbouring cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the neighbour cell (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell).

Ocn is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.

Ms is the measurement result of the serving cell, not taking into account any offsets.

Ofs is the frequency specific offset of the serving frequency (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the serving frequency).

Ocs is the cell specific offset of the serving cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the serving frequency), and is set to zero if not configured for the serving cell.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Off is the offset parameter for this event (i.e. *a3-Offset* as defined within *reportConfigEUTRA* for this event).

Mn, Ms are expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Ofn, Ocn, Ofs, Ocs, Hys, Off are expressed in dB.

[TS 36.331, clause 5.5.6.1]

E-UTRAN applies the handover procedure as follows:

- when performing the handover procedure, as specified in 5.3.5.4, ensure that a *measObjectId* corresponding to the handover target carrier frequency is configured as a result of the procedures described in this sub-clause and in 5.3.5.4;

...

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *triggerType* is set to '*periodical*':

3> remove this *measId* from the *measIdList* within *VarMeasConfig*:

1> if the procedure was triggered due to inter-frequency handover or successful re-establishment to an inter-frequency cell, update the *measId* values in the *measIdList* within *VarMeasConfig* as follows:

2> if a *measObjectId* value corresponding to the target carrier frequency exists in the *measObjectList* within *VarMeasConfig*:

3> for each *measId* value in the *measIdList*:

4> if the *measId* value is linked to the *measObjectId* value corresponding to the source carrier frequency:

5> link this *measId* value to the *measObjectId* value corresponding to the target carrier frequency;

4> else if the *measId* value is linked to the *measObjectId* value corresponding to the target carrier frequency:

5> link this *measId* value to the *measObjectId* value corresponding to the source carrier frequency;

2> else:

3> remove all *measId* values that are linked to the *measObjectId* value corresponding to the source carrier frequency;

1> remove all measurement reporting entries within *VarMeasReportList*;

1> reset the periodical reporting timer or timer T321, whichever one is running, as well as associated information (e.g. *timeToTrigger*) for all *measId*;

1> release the measurement gaps, if activated;

NOTE: If the UE requires measurement gaps to perform inter-frequency or inter-RAT measurements, the UE resumes the inter-frequency and inter-RAT measurements after the E-UTRAN has setup the measurement gaps.

8.3.1.9a.3 Test description

8.3.1.9a.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 2.
- System information combination 2 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.9a.3.2 Test procedure sequence

Table 8.3.1.9a.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while column marked "T1 " and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.9a.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 2	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	off	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M2 > M1). (NOTE 1)
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-79	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M2 > M1). (NOTE 1)
T2	Cell-specific RS EPRE	dBm/15kHz	-79	-85	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M1 > M2). (NOTE 1)
NOTE 1: Power level "Off" is defined in TS36.508 Table 6.2.2.1-1.					

Table 8.3.1.9a.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup intra frequency measurements on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the setup of intra frequency measurements on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 1 and Cell 2 parameters according to the row "T1" in table 8.3.1.9a.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 for Cell 2.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message without a measConfig message on Cell 1, to order the UE to perform intra frequency handover to Cell 2.	<--	*RRCConnectionReconfiguration*	-	-
6	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 2?	-->	*RRCConnectionReconfigurationComplete*	1	P
7	The SS changes Cell 1 and Cell 2 parameters according to the row "T2" in table 8.3.1.9a.3.2-1.	-	-	-	-
8	Check: Does the UE transmit a *MeasurementReport* message on Cell 2 to report event A3 for Cell 1?	-->	*MeasurementReport*	1	P
9	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicate that the UE is in E-UTRA RRC_CONNECTED state on Cell 2?	-	-	1,2	-

8.3.1.9a.3.3 Specific message contents

Table 8.3.1.9a.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.9a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.1.9a.3.3-2: *MeasConfig* (Table 8.3.1.9a.3.3-1)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfigEUTRA-A3		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1entry		
measId[1]	1	Intra frequency	
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

Table 8.3.1.9a.3.3-3: *MeasurementReport* (step 4, Table 8.3.1.9a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 2		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.9a.3.3-4: *RRCConnectionReconfiguration* (step 6, Table 8.3.1.9a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition HO

Table 8.3.1.9a.3.3-5: *MobilityControlInfo* (Table 8.1.3.9.3.3-4)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 2		
carrierFreq	Not present		
}			

Table 8.3.1.9a.3.3-6: *MeasurementReport* (step 8, Table 8.3.1.9a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 1		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

8.3.1.10 Measurement configuration control and reporting / Intra E-UTRAN measurements / Inter-frequency handover / IE measurement configuration not present

8.3.1.10.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the intra frequency and inter frequency measurements }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo
indicating a different E-UTRA frequency and not including a measConfig }
    then { UE performs inter frequency handover, continues the intra frequency measurement and
continues inter frequency measurement after the activation of the measurement gaps }
           }
```

8.3.1.10.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.5.6.1.

[TS 36.331, clause 5.5.6.1]

E-UTRAN applies the handover procedure as follows:

- when performing the handover procedure, as specified in 5.3.5.4, ensure that a *measObjectId* corresponding to the handover target carrier frequency is configured as a result of the procedures described in this subclause and in 5.3.5.4;

...

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *triggerType* is set to '*periodical*':

3> remove this *measId* from the *measIdList* within *VarMeasConfig*:

1> if the procedure was triggered due to inter-frequency handover or successful re-establishment to an inter-frequency cell, update the *measId* values in the *measIdList* within *VarMeasConfig* as follows:

2> if a *measObjectId* value corresponding to the target carrier frequency exists in the *measObjectList* within *VarMeasConfig*

3> for each *measId* value in the *measIdList*:

4> if the *measId* value is linked to the *measObjectId* value corresponding to the source carrier frequency:

5> link this *measId* value to the *measObjectId* value corresponding to the target carrierfrequency;

4> else if the *measId* value is linked to the *measObjectId* value corresponding to the target carrier frequency:

5> link this *measId* value to the *measObjectId* value corresponding to the source carrier frequency;

2> else:

3> remove all *measId* values that are linked to the *measObjectId* value corresponding to the source carrier frequency;

1> remove all measurement reporting entries within *VarMeasReportList*;

1> reset the periodical reporting timer or timer T321, whichever one is running, as well as associated information (e.g. *timeToTrigger*) for all *measId*;

1> release the measurement gaps, if activated;

NOTE: If the UE requires measurement gaps to perform inter-frequency or inter-RAT measurements, the UE resumes the inter-frequency and inter-RAT measurements after the E-UTRAN has setup the measurement gaps.

8.3.1.10.3 Test description

8.3.1.10.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 2, Cell 3 and Cell 12.
- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.10.3.2 Test procedure sequence

Table 8.3.1.10.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1", "T2","T3", and "T4" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.10.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 2 (DL only)	Cell 3	Cell 12 (DL only)	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-85	-91	-97	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) do not satisfy entry condition for event A3 (M2 < M1). (NOTE 1).
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	-79	-97	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M2 > M1). (NOTE 1).
T2	Cell-specific RS EPRE	dBm/15 kHz	-85	"Off"	-73	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 3 (M3) satisfy entry condition for event A3 (M3 > M1). (NOTE 1).
T3	Cell-specific RS EPRE	dBm/15 kHz	-97	"Off"	-85	-79	The power level values are such that measurement results for Cell 3 (M3) and Cell 12 (M12) satisfy entry condition for event A3 (M12 > M3). (NOTE 1).
T4	Cell-specific RS EPRE	dBm/15 kHz	-73	"Off"	-85	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 3 (M3) satisfy entry condition for event A3 (M1 > M3). (NOTE 1).
NOTE 1: Power level “Off” is defined in TS36.508 Table 6.2.2.1-1.							

Table 8.3.1.10.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup intra and inter frequency measurements on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the setup of intra and inter frequency measurements on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes the cell-specific reference signal levels of Cell 2 according to the row "T1" in table 8.3.1.10.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to perform event A3 intra frequency reporting for Cell 2 during the next 30 s.	-	*MeasurementReport*	-	-
5	The SS changes the cell-specific reference signal levels of Cell 3 and switches "Off" Cell 2 according to row "T2" in table 8.3.1.10.3.2-1.	-	-	-	-
6	The UE transmits a *MeasurementReport* message on Cell 1 to perform event A3 inter frequency reporting for Cell 3 during the next 30 s.	-->	*MeasurementReport*	-	-
7	The SS transmits an *RRCConnectionReconfiguration* message without a *measConfig*, to order the UE to perform inter frequency handover to Cell 3.	<--	*RRCConnectionReconfiguration*	-	-
8	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message to Cell 3?	-->	*RRCConnectionReconfigurationComplete*	1	P
9	The SS transmits an *RRCConnectionReconfiguration* message to activate the measurement gaps on Cell 3.	<--	*RRCConnectionReconfiguration*	-	-
10	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the activation of the measurement gaps on Cell 3.	-->	*RRCConnectionReconfigurationComplete*	-	-
11	The SS changes the cell-specific reference signal levels of Cell 1 and Cell 3 and switches "On" Cell 12 according to the row "T3" in table 8.3.1.10.3.2-1.	-	-	-	-
12	Check: Does the UE transmit a *MeasurementReport* message on Cell 3 to perform event A3 intra frequency reporting for Cell 12 during the next 30 s?	-->	*MeasurementReport*	1	P
13	The SS changes the cell-specific reference signal levels of Cell 1 and switches Cell 12 off according to row "T4" in table 8.3.1.10.3.2-1.	-	-	-	-
14	Check: Does the UE transmit a *MeasurementReport* message on Cell 3 to perform event A3 inter frequency reporting for Cell 1 during the next 30 s?	-->	*MeasurementReport*	1	P
15	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicate that the UE is in E-UTRA RRC_CONNECTED state on Cell 3?	-	-	1	-

8.3.1.10.3.3 Specific message contents

Table 8.3.1.10.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.10.3.2-1)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.1.10.3.3-2: *MeasConfig* (Table 8.3.1.10.3.3-1)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f2		
measObject[2]	MeasObjectEUTRA-GENERIC(f2)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfigEUTRA-A3		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3		
measId[2]	2		
measObjectId[2]	IdMeasObject-f2		
reportConfigId[2]	IdReportConfig-A3		
}			
}			

Table 8.3.1.10.3.3-3: Void

Table 8.3.1.10.3.3-4: *MeasurementReport* (step 4, Table 8.3.1.10.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 2		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.10.3.3-5: *MeasurementReport* (step 6, Table 8.3.1.10.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 3		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.10.3.3-6: *RRCConnectionReconfiguration* (step 7, Table 8.3.1.10.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition HO

Table 8.3.1.10.3.3-7: *MobilityControlInfo* (Table 8.3.1.10.3.3-6)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 3		
carrierFreq	Same DL EARFCN as used for Cell 3		
}			

Table 8.3.1.10.3.3-8: *RRCConnectionReconfiguration* (step 9, Table 8.3.1.10.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.1.10.3.3-9: *MeasConfig* (Table 8.3.1.10.3.3-8)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ

Table 8.3.1.10.3.3-10: *MeasurementReport* (step 12, Table 8.3.1.10.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 12		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.10.3.3-11: *MeasurementReport* (step 14, Table 8.3.1.10.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 1		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			

8.3.1.11 Measurement configuration control and reporting / Intra E-UTRAN measurements / Continuation of the measurements after RRC connection re-establishment

8.3.1.11.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the intra frequency measurement and after receiving an RRCConnectionReconfiguration
message including a mobilityControlInfo indicating a different E-UTRA cell having attempted intra
frequency handover}
ensure that {
  when { UE detects handover failure and the intra frequency cell is selectable }
    then {UE performs RRC Connection Re-establishment, continues the intra frequency measurement }
}
```

(2)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter frequency measurement and after receiving an RRCConnectionReconfiguration
message including a mobilityControlInfo indicating a different E-UTRA cell having attempted intra
frequency handover}
ensure that {
  when { UE detects handover failure and the intra frequency cell is selectable }
    then {UE performs RRC Connection Re-establishment, continues the inter frequency measurement
after the activation of the measurement gaps }
}
```

8.3.1.11.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.5.4, 5.3.5.6, 5.3.7.2 and 5.5.6.1.

[TS 36.331,clause 5.3.5.4]

If the *RRCConnectionReconfiguration* message includes the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

1> stop timer T310, if running;

1> start timer T304 with the timer value set to *t304*, as included in the *mobilityControlInfo*;

1> if the *carrierFreq* is included:

2> consider the target cell to be one on the frequency indicated by the *carrierFreq* with a physical cell identity indicated by the *targetPhysCellId*;

1> else:

2> consider the target cell to be one on the current frequency with a physical cell identity indicated by the *targetPhysCellId*;

1> start synchronising to the DL of the target cell;

NOTE 1: The UE should perform the handover as soon as possible following the reception of the RRC message triggering the handover, which could be before confirming successful reception (HARQ and ARQ) of this message.

1> reset MAC;

1> re-establish PDCP for all RBs that are established;

NOTE 2: The handling of the radio bearers after the successful completion of the PDCP re-establishment, e.g. the re-transmission of unacknowledged PDCP SDUs (as well as the associated status reporting), the handling of the SN and the HFN, is specified in TS 36.323 [8].

1> re-establish RLC for all RBs that are established;

1> apply the value of the *newUE-Identity* as the C-RNTI;

1> configure lower layers in accordance with the received *radioResourceConfigCommon*;

1> if the *RRCConnectionReconfiguration* message includes the *radioResourceConfigDedicated*:

2> perform the radio resource configuration procedure as specified in 5.3.10;

…

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

1> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission;

1> if MAC successfully completes the random access procedure:

2> stop timer T304;

2> apply the parts of the configuration that do not require the UE to know the SFN of the target cell;

2> apply the parts of the measurement and the radio resource configuration that require the UE to know the SFN of the target cell (e.g. measurement gaps, periodic CQI reporting, scheduling request configuration, sounding RS configuration), if any, upon acquiring the SFN of the target cell;

2> the procedure ends;

NOTE 3: The UE is not required to determine the SFN of the target cell by acquiring system information from that cell before performing RACH access in the target cell.

[TS 36.331,clause 5.3.5.6]

The UE shall:

1> if T304 expires (handover failure):

NOTE: Following T304 expiry any dedicated preamble, if provided within the *rach-ConfigDedicated*, is not available for use by the UE anymore.

2> revert back to the configuration used in the source cell, excluding the configuration configured by the *physicalConfigDedicated*, the *mac-MainConfig* and the *sps-Config*;

2> initiate the connection re-establishment procedure as specified in 5.3.7, upon which the RRC connection reconfiguration procedure ends;

[TS 36.331,clause 5.3.7.2]

The UE shall only initiate the procedure when AS security has been activated. The UE initiates the procedure when one of the following conditions is met:

1> upon detecting radio link failure, in accordance with 5.3.11; or

1> upon handover failure, in accordance with 5.3.5.6; or

1> upon mobility from E-UTRA failure, in accordance with 5.4.3.5; or

1> upon integrity check failure indication from lower layers; or

1> upon an RRC connection reconfiguration failure, in accordance with 5.3.5.5;

Upon initiation of the procedure, the UE shall:

1> stop timer T310, if running;

1> start timer T311;

1> suspend all RBs except SRB0;

1> reset MAC;

1> apply the default physical channel configuration as specified in 9.2.4;

1> apply the default semi-persistent scheduling configuration as specified in 9.2.3;

1> apply the default MAC main configuration as specified in 9.2.2;

1> perform cell selection in accordance with the cell selection process as specified in TS 36.304 [4];

[TS 36.331,clause 5.5.6.1]

E-UTRAN applies the re-establishment procedure as follows:

- when performing the connection re-establishment procedure, as specified in 5.3.7, ensure that a *measObjectId* corresponding to the target carrier frequency is configured as a result of the procedure described in this sub-clause and the subsequent connection reconfiguration procedure immediately following the re-establishment procedure;

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *triggerType* is set to '*periodical*':

3> remove this *measId* from the *measIdList* within *VarMeasConfig*:

1> if the procedure was triggered due to inter-frequency handover or successful re-establishment to an inter-frequency cell, update the *measId* values in the *measIdList* within *VarMeasConfig* as follows:

2> if a *measObjectId* value corresponding to the target carrier frequency exists in the *measObjectList* within *VarMeasConfig*:

3> for each *measId* value in the *measIdList*:

4> if the *measId* value is linked to the *measObjectId* value corresponding to the source carrier frequency:

5> link this *measId* value to the *measObjectId* value corresponding to the target carrier frequency;

4> else if the *measId* value is linked to the *measObjectId* value corresponding to the target carrier frequency:

5> link this *measId* value to the *measObjectId* value corresponding to the source carrier frequency;

2> else:

3> remove all *measId* values that are linked to the *measObjectId* value corresponding to the source carrier frequency;

1> remove all measurement reporting entries within *VarMeasReportList*;

1> reset the periodical reporting timer or timer T321, whichever one is running, as well as associated information (e.g. *timeToTrigger*) for all *measId*;

1> release the measurement gaps, if activated;

NOTE: If the UE requires measurement gaps to perform inter-frequency or inter-RAT measurements, the UE resumes the inter-frequency and inter-RAT measurements after the E-UTRAN has setup the measurement gaps.

8.3.1.11.3 Test description

8.3.1.11.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 2 and Cell 3.

- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.11.3.2 Test procedure sequence

Table 8.3.1.11.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1", "T2","T3", "T4", "T5" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.11.3.2-1: Time instances of cell power levels

	Parameter	Unit	Cell 1	Cell 2	Cell 3 (DL only)	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-85	”off”	”off”	
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	”off”	-73	The power level values are such that measurement results for Cell 1 (M1) and Cell 3 (M3) satisfy entry condition for event A3 (M3 - Hys > M1).
T2	Cell-specific RS EPRE	dBm/15 kHz	-85	-79	”off”	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M2 - Hys > M1).
T3	Cell-specific RS EPRE	dBm/15 kHz	”off”	-79	”off”	The power level values are assigned values to satisfy SrxlevCell 1 < 0 and SrxlevCell 3 < 0 such that selecting Cell 2 is guaranteed
T4	Cell-specific RS EPRE	dBm/15 kHz	-79	-85	”off”	The power level values are such that measurement results for Cell 2 (M2) and Cell 1 (M1) satisfy entry condition for event A3 (M1 - Hys > M2).
T5	Cell-specific RS EPRE	dBm/15 kHz	”off”	-85	-73	The power level values are such that measurement results for Cell 2 (M2) and Cell 3 (M3) satisfy entry condition for event A3 (M3 - Hys > M2).

Table 8.3.1.11.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup intra and inter frequency measurements on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the setup of intra and inter frequency measurements on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
-	EXCEPTION: Steps 3a1 to 3a2 describe behaviour that depends on the UE capability; the "lower case letter" identifies a step sequence that takes place if a capability is supported.	-	-	-	-
3a1	IF pc_FeatrGrp_25 THEN the SS changes Cell 3 power levels according to the row "T1" in Table 8.3.1.11.3.2-1.	-	-	-	-
3a2	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 for Cell 3.	-->	*MeasurementReport*	-	-
4	The SS changes Cell 2 and Cell 3 power levels according to the row "T2" in Table 8.3.1.11.3.2-1.	-	-	-	-
5	The UE transmits a *MeasurementReport* message on Cell 1 to perform event A3 intra frequency reporting for Cell 2.	-->	*MeasurementReport*	-	-
6	The SS transmits an *RRCConnectionReconfiguration* message including a *mobilityControlInfo*, to order the UE to perform intra frequency handover to Cell 2.	<--	*RRCConnectionReconfiguration*	-	-
-	EXCEPTION: In parallel to the events described in step 7 the steps specified in Table 8.3.1.11.3.2-3 should take place.	-	-	-	-
7	The SS changes Cell 1 power levels according to the row "T3" in Table 8.3.1.11.3.2-1.	-	-	-	-
8	Check: Does the UE transmit an *RRCConnectionReestablishmentRequest* message on Cell 2?	-->	*RRCConnectionReestablishmentRequest*	1,2	P
9	The SS transmits an *RRCConnectionReestablishment* message to resume SRB1 operation and re-activate security on Cell 2.	<--	*RRCConnectionReestablishment*	-	-
10	The UE transmits an *RRCConnectionReestablishmentComplete* message on Cell 2.	-->	*RRCConnectionReestablishmentComplete*	-	-
11	The SS transmits an *RRCConnectionReconfiguration* message to resume existing radio bearer on Cell 2.	<--	*RRCConnectionReconfiguration*	-	-
12	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 2.	-->	*RRCConnectionReconfigurationComplete*	-	-
13	The SS changes Cell 1 and Cell 2 power levels according to the row "T4" in Table 8.3.1.11.3.2-1.	-	-	-	-
14	Check: Does the UE transmit a *MeasurementReport* message on Cell 2 to perform event A3 intra frequency reporting for Cell 1?	-->	*MeasurementReport*	1	P
-	EXCEPTION: Steps 15a1 to 15a4 describe behaviour that depends on the UE capability; the "lower case letter" identifies a step sequence that takes place if a capability is supported.	-	-	-	-
15a1	IF pc_FeatrGrp_25 THEN the SS transmits an *RRCConnectionReconfiguration* message to	<--	*RRCConnectionReconfiguration*	-	-

	activate the measurement gaps on Cell 2.				
15a2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the activation of the measurement gaps on Cell 2.	-->	*RRCConnectionReconfigurationComplete*	-	-
15a3	The SS changes Cell 1 and Cell 3 power levels according to the row "T5" in Table 8.3.1.11.3.2-1.	-	-	-	-
15a4	Check: Does the UE transmit a *MeasurementReport* message on Cell 2 to report event A3 for Cell 3?	-->	*MeasurementReport*	2	P
16	Check: Does the test result of CALL generic test procedure in 36.508 subclause 6.2.4.3 indicate that the UE is in E-UTRA RRC_CONNECTED state on Cell 2?	-	-	1,2	-

Table 8.3.1.11.3.2-3: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: The steps 1 and 2 below are repeated for the duration of T304.	-	-	-	-
1	The UE attempts to perform the intra frequency handover using MAC Random Access Preamble on Cell 2.	-	-	-	-
2	The SS does not respond.	-	-	-	-

8.3.1.11.3.3 Specific message contents

Table 8.3.1.11.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.11.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.1.11.3.3-2: *MeasConfig* (step 1, Table 8.3.1.11.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f2		pc_FeatrGrp_25
measObject[2]	MeasObjectEUTRA-GENERIC(f2)		pc_FeatrGrp_25
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfigEUTRA-A3		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3		
measId[2]	2		pc_FeatrGrp_25
measObjectId[2]	IdMeasObject-f2		pc_FeatrGrp_25
reportConfigId[2]	IdReportConfig-A3		pc_FeatrGrp_25
}			
}			

Table 8.3.1.11.3.3-3: Void

Table 8.3.1.11.3.3-4: *MeasurementReport* (step 3a2,Table 8.3.1.11.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 3		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.11.3.3-5: *MeasurementReport* (step 5, Table 8.3.1.11.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 2		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.11.3.3-6: *RRCConnectionReconfiguration* (step 6,Table 8.3.1.11.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition HO

Table 8.3.1.11.3.3-7: *MobilityControlInfo* (step 6, Table 8.1.3.11.3.2-2)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 2		
carrierFreq	Not present		
}			

Table 8.3.1.11.3.3-8: *RRCConnectionReestablishmentRequest* (step 8, Table 8.3.1.11.3.2-2)

Derivation Path: 36.508, Table 4.6.1-13			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReestablishmentRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionReestablishmentRequest-r8 SEQUENCE {			
ue-Identity SEQUENCE {			
c-RNTI	the value of the C-RNTI of the UE		
physCellId	PhysicalCellIdentity of Cell 1		
shortMAC-I	The same value as the 16 least significant bits of the XMAC-I value calculated by SS.		
}			
reestablishmentCause	handoverFailure		
}			
}			
}			

Table 8.3.1.11.3.3-9: *RRCConnectionReestablishment* (step 9, Table 8.3.1.11.3.2-2)

Derivation Path: 36.508, Table 4.6.1-10			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReestablishment ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReestablishment-r8 SEQUENCE {			
nextHopChainingCount	0		
}			
}			
}			
}			

Table 8.3.1.11.3.3-10: *RRCConnectionReconfiguration* (step 11, Table 8.3.1.11.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
radioResourceConfigDedicated	RadioResourceConfigDedicated-HO		
}			
}			
}			
}			

Table 8.3.1.11.3.3-11: *MeasurementReport* (step 14,Table 8.3.1.11.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 1		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.11.3.3-12: *RRCConnectionReconfiguration* (step 15a1,Table 8.3.1.11.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8 condition MEAS

Table 8.3.1.11.3.3-13: *MeasConfig* (step 15a1,Table 8.3.1.11.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ

Table 8.3.1.11.3.3-14: *MeasurementReport* (step 15a4, Table 8.3.1.11.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 3		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.11.3.3-15: *SystemInformationBlockType2* for Cell 1, cell 2 and Cell 3 (preamble and all the steps in Table 8.3.1.11.3.2-2)

Derivation Path: 36.508, Table 4.6.3-12			
Information Element	**Value/remark**	**Comment**	**Condition**
ra-SupervisionInfo SEQUENCE {			
preambleTransMax	n50		
}			

8.3.1.11a Measurement configuration control and reporting / Intra Frequency measurements / Continuation of the measurements after RRC connection re-establishment / Single Frequency operation

8.3.1.11a.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the intra frequency measurement and after receiving an RRCConnectionReconfiguration
message including a mobilityControlInfo indicating a different E-UTRA cell having attempted intra
frequency handover}
ensure that {
  when { UE detects handover failure and the intra frequency cell is selectable }
    then {UE performs RRC Connection Re-establishment, continues the intra frequency measurement }
}
```

8.3.1.11a.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.5.4, 5.3.5.6, 5.3.7.2 and 5.5.6.1.

[TS 36.331,clause 5.3.5.4]

If the *RRCConnectionReconfiguration* message includes the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

1> stop timer T310, if running;

1> start timer T304 with the timer value set to *t304*, as included in the *mobilityControlInfo*;

1> if the *carrierFreq* is included:

2> consider the target cell to be one on the frequency indicated by the *carrierFreq* with a physical cell identity indicated by the *targetPhysCellId*;

1> else:

2> consider the target cell to be one on the current frequency with a physical cell identity indicated by the *targetPhysCellId*;

1> start synchronising to the DL of the target cell;

NOTE 1: The UE should perform the handover as soon as possible following the reception of the RRC message triggering the handover, which could be before confirming successful reception (HARQ and ARQ) of this message.

1> reset MAC;

1> re-establish PDCP for all RBs that are established;

NOTE 2: The handling of the radio bearers after the successful completion of the PDCP re-establishment, e.g. the re-transmission of unacknowledged PDCP SDUs (as well as the associated status reporting), the handling of the SN and the HFN, is specified in TS 36.323 [8].

1> re-establish RLC for all RBs that are established;

1> apply the value of the *newUE-Identity* as the C-RNTI;

1> configure lower layers in accordance with the received *radioResourceConfigCommon*;

1> if the *RRCConnectionReconfiguration* message includes the *radioResourceConfigDedicated*:

2> perform the radio resource configuration procedure as specified in 5.3.10;

…

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

1> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission;

1> if MAC successfully completes the random access procedure:

2> stop timer T304;

2> apply the parts of the configuration that do not require the UE to know the SFN of the target cell;

2> apply the parts of the measurement and the radio resource configuration that require the UE to know the SFN of the target cell (e.g. measurement gaps, periodic CQI reporting, scheduling request configuration, sounding RS configuration), if any, upon acquiring the SFN of the target cell;

2> the procedure ends;

NOTE 3: The UE is not required to determine the SFN of the target cell by acquiring system information from that cell before performing RACH access in the target cell.

[TS 36.331,clause 5.3.5.6]

The UE shall:

1> if T304 expires (handover failure):

NOTE: Following T304 expiry any dedicated preamble, if provided within the *rach-ConfigDedicated*, is not available for use by the UE anymore.

2> revert back to the configuration used in the source cell, excluding the configuration configured by the *physicalConfigDedicated*, the *mac-MainConfig* and the *sps-Config*;

2> initiate the connection re-establishment procedure as specified in 5.3.7, upon which the RRC connection reconfiguration procedure ends;

[TS 36.331,clause 5.3.7.2]

The UE shall only initiate the procedure when AS security has been activated. The UE initiates the procedure when one of the following conditions is met:

1> upon detecting radio link failure, in accordance with 5.3.11; or

1> upon handover failure, in accordance with 5.3.5.6; or

1> upon mobility from E-UTRA failure, in accordance with 5.4.3.5; or

1> upon integrity check failure indication from lower layers; or

1> upon an RRC connection reconfiguration failure, in accordance with 5.3.5.5;

Upon initiation of the procedure, the UE shall:

1> stop timer T310, if running;

1> start timer T311;

1> suspend all RBs except SRB0;

1> reset MAC;

1> apply the default physical channel configuration as specified in 9.2.4;

1> apply the default semi-persistent scheduling configuration as specified in 9.2.3;

1> apply the default MAC main configuration as specified in 9.2.2;

1> perform cell selection in accordance with the cell selection process as specified in TS 36.304 [4];

[TS 36.331,clause 5.5.6.1]

E-UTRAN applies the re-establishment procedure as follows:

- when performing the connection re-establishment procedure, as specified in 5.3.7, ensure that a *measObjectId* corresponding to the target carrier frequency is configured as a result of the procedure described in this sub-clause and the subsequent connection reconfiguration procedure immediately following the re-establishment procedure;

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *triggerType* is set to '*periodical*':

3> remove this *measId* from the *measIdList* within *VarMeasConfig*:

1> if the procedure was triggered due to inter-frequency handover or successful re-establishment to an inter-frequency cell, update the *measId* values in the *measIdList* within *VarMeasConfig* as follows:

2> if a *measObjectId* value corresponding to the target carrier frequency exists in the *measObjectList* within *VarMeasConfig*:

3> for each *measId* value in the *measIdList*:

4> if the *measId* value is linked to the *measObjectId* value corresponding to the source carrier frequency:

5> link this *measId* value to the *measObjectId* value corresponding to the target carrier frequency;

4> else if the *measId* value is linked to the *measObjectId* value corresponding to the target carrier frequency:

5> link this *measId* value to the *measObjectId* value corresponding to the source carrier frequency;

2> else:

3> remove all *measId* values that are linked to the *measObjectId* value corresponding to the source carrier frequency;

1> remove all measurement reporting entries within *VarMeasReportList*;

1> reset the periodical reporting timer or timer T321, whichever one is running, as well as associated information (e.g. *timeToTrigger*) for all *measId*;

1> release the measurement gaps, if activated;

NOTE: If the UE requires measurement gaps to perform inter-frequency or inter-RAT measurements, the UE resumes the inter-frequency and inter-RAT measurements after the E-UTRAN has setup the measurement gaps.

8.3.1.11a.3 Test description

8.3.1.11a.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 2.
- System information combination 2 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.11a.3.2 Test procedure sequence

Table 8.3.1.11a.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1", "T2",and "T3" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.11a.3.2-1: Time instances of cell power levels

	Parameter	Unit	Cell 1	Cell 2	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-85	”off”	
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	-79	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M2 - Hys > M1).
T2	Cell-specific RS EPRE	dBm/15 kHz	”off”	-79	The power level values are assigned values to satisfy SrxlevCell 1 < 0 such that selecting Cell 2 is guaranteed
T3	Cell-specific RS EPRE	dBm/15 kHz	-79	-85	The power level values are such that measurement results for Cell 2 (M2) and Cell 1 (M1) satisfy entry condition for event A3 (M1 - Hys > M2).

Table 8.3.1.11a.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup intra frequency measurements on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the setup of intra frequency measurements on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 2 power levels according to the row "T1" in Table 8.3.1.11a.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to perform event A3 intra frequency reporting for Cell 2.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message including a *mobilityControlInfo*, to order the UE to perform intra frequency handover to Cell 2.	<--	*RRCConnectionReconfiguration*	-	-
-	EXCEPTION: In parallel to the events described in step 6 the steps specified in Table 8.3.1.11a.3.2-3 should take place.	-	-	-	-
6	The SS changes Cell 1 power levels according to the row "T2" in Table 8.3.1.11a.3.2-1.	-	-	-	-
7	Check: Does the UE transmit an *RRCConnectionReestablishmentRequest* message on Cell 2?	-->	*RRCConnectionReestablishmentRequest*	1	P
8	The SS transmits an *RRCConnectionReestablishment* message to resume SRB1 operation and re-activate security on Cell 2.	<--	*RRCConnectionReestablishment*	-	-
9	The UE transmits an *RRCConnectionReestablishmentComplete* message on Cell 2.	-->	*RRCConnectionReestablishmentComplete*	-	-
10	The SS transmits an *RRCConnectionReconfiguration* message to resume existing radio bearer on Cell 2.	<--	*RRCConnectionReconfiguration*	-	-
11	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 2.	-->	*RRCConnectionReconfigurationComplete*	-	-
12	The SS changes Cell 1 and Cell 2 power levels according to the row "T3" in Table 8.3.1.11a.3.2-1.	-	-	-	-
13	Check: Does the UE transmit a *MeasurementReport* message on Cell 2 to perform event A3 intra frequency reporting for Cell 1?	-->	*MeasurementReport*	1	P
14	Check: Does the test result of CALL generic test procedure in 36.508 subclause 6.4.2.3 indicate that the UE is in E-UTRA RRC_CONNECTED state on Cell 2?	-	-	1	-

Table 8.3.1.11a.3.2-3: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: The steps 1 and 2 below are repeated for the duration of T304.	-	-	-	-
1	The UE attempts to perform the intra frequency handover using MAC Random Access Preamble on Cell 2.	-	-	-	-
2	The SS does not respond.	-	-	-	-

8.3.1.11a.3.3 Specific message contents

Table 8.3.1.11a.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.11a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.1.11a.3.3-2: *MeasConfig* (step 1, Table 8.3.1.11a.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1,			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfigEUTRA-A3		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

Table 8.3.1.11a.3.3-3: *MeasurementReport* (step 4, Table 8.3.1.11a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 2		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.11a.3.3-4: *RRCConnectionReconfiguration* (step 6,Table 8.3.1.11a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition HO

Table 8.3.1.11a.3.3-5: *MobilityControlInfo* (step 6, Table 8.1.3.11.3.2-2)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 2		
carrierFreq	Not present		
}			

Table 8.3.1.11a.3.3-6: *RRCConnectionReestablishmentRequest* (step 7, Table 8.3.1.11a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-13			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReestablishmentRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionReestablishmentRequest-r8 SEQUENCE {			
ue-Identity SEQUENCE {			
c-RNTI	the value of the C-RNTI of the UE		
physCellId	PhysicalCellIdentity of Cell 1		
shortMAC-I	The same value as the 16 least significant bits of the XMAC-I value calculated by SS.		
}			
reestablishmentCause	handoverFailure		
}			
}			
}			

Table 8.3.1.11a.3.3-7: *RRCConnectionReestablishment* (step 8, Table 8.3.1.11a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-10			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReestablishment ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReestablishment-r8 SEQUENCE {			
nextHopChainingCount	0		
}			
}			
}			
}			

Table 8.3.1.11a.3.3-8: *RRCConnectionReconfiguration* (step 10, Table 8.3.1.11a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
radioResourceConfigDedicated	RadioResourceConfigDedicated-HO		
}			
}			
}			
}			

Table 8.3.1.11a.3.3-9: *MeasurementReport* (step 13,Table 8.3.1.11a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 1		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			

8.3.1.12 Measurement configuration control and reporting / Intra E-UTRAN measurements / Two simultaneous events A3 (inter-band measurements)

8.3.1.12.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurements configured for two event A3 at the same
time}
ensure that {
  when { Neighbour becomes offset better than serving }
   then { UE sends MeasurementReport with correct measId for event A3 }
}
```

8.3.1.12.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.4.1, 5.5.4.4 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> If the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the Measurement configuration procedure as specified in 5.5.2;

...

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the corresponding *reportConfig* includes a purpose set to '*reportStrongestCellsForSON*':

3> consider any neighbouring cell detected on the associated frequency to be applicable;

2> else if the corresponding *reportConfig* includes a purpose set to '*reportCGI*':

3> consider any neighbouring cell detected on the associated frequency/ set of frequencies (GERAN) which has a physical cell identity matching the value of the *cellForWhichToReportCGI* included in the corresponding *measObject* within the *VarMeasConfig* to be applicable;

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the *VarMeasConfig* for this *measId*;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *purpose is* included and set to '*reportCGI*' and if the UE acquired the information needed to set all fields of *cellGlobalId* for the requested cell:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> stop timer T321;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> upon expiry of the T321 for this *measId*:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

NOTE 3: If the UE is configured with DRX, the UE may delay the measurement reporting for event triggered and periodical triggered measurements until the Active Time, which is defined in TS 36.321 [6].

[TS 36.331, clause 5.5.4.4]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A3-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A3-2, as specified below, is fulfilled;

Inequality A3-1 (Entering condition)

$$Mn + Ofn + Ocn - Hys > Ms + Ofs + Ocs + Off$$

Inequality A3-2 (Leaving condition)

$$Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off$$

The variables in the formula are defined as follows:

Mn is the measurement result of the neighbouring cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the neighbour cell (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell).

Ocn is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.

Ms is the measurement result of the serving cell, not taking into account any offsets.

Ofs is the frequency specific offset of the serving frequency (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the serving frequency).

Ocs is the cell specific offset of the serving cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the serving frequency), and is set to zero if not configured for the serving cell.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Off is the offset parameter for this event (i.e. *a3-Offset* as defined within *reportConfigEUTRA* for this event).

Mn, Ms are expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Ofn, Ocn, Ofs, Ocs, Hys, Off are expressed in dB.

[TS 36.331, clause 5.5.5]

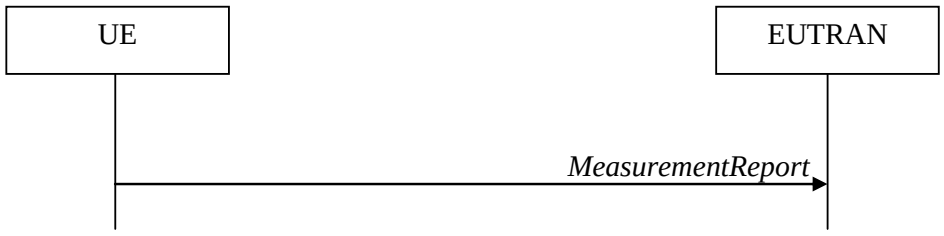

Figure 5.5.5-1: Measurement reporting

The purpose of this procedure is to transfer measurement results from the UE to E-UTRAN.

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE 4: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of decreasing quantity, i.e. the best cell is included first;

3> else if the *purpose* is set to '*reportCGI*':

4> if the mandatory present fields of the *cellGlobalId* for the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* have been obtained:

5> include the *cgi-Info* containing all the fields that have been successfully acquired;

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

1> else:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasReportList* for this *measId*;

3> remove this *measId* from the *measIdList* within *VarMeasConfig*;

1> if the measured results are for CDMA2000 HRPD:

2> set the *preRegistrationStatusHRPD* to the UE's CDMA2000 upper layer's HRPD *preRegistrationStatus*;

1> if the measured results are for CDMA2000 1xRTT:

2> set the *preRegistrationStatusHRPD* to '*FALSE*';

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.1.12.3 Test description

8.3.1.12.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 2 and Cell 10
- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.12.3.2 Test procedure sequence

Table 8.3.1.12.3.2-1 illustrates the downlink power levels to be applied for Cell 1, Cell 2 and Cell 10 at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while rows marked "T1"and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.12.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 2 (DL only)	Cell 10 (DL only)	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	-91	Off	Power levels are such that entry condition for event A3 (measId 1 & 2) is not satisfied: $Mn+Ofn+Ocn+Hys < Ms+Ofs+Ocs+Off$
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-79	Off	Power levels are such that entry condition for event A3 (measId 1) is satisfied: $Mn+Ofn+Ocn-Hys > Ms+Ofs+Ocs+Off$
T2	Cell-specific RS EPRE	dBm/15kHz	-85	Off	-73	Power levels are such that entry condition for event A3 (measId 2) is satisfied: $Mn+Ofn+Ocn-Hys > Ms+Ofs+Ocs+Off$

Table 8.3.1.12.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including *MeasConfig* to setup intra E-UTRAN measurement and reporting for two event A3 (*measId* 1 and *measId* 2) (intra and inter frequency measurement).	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.12.3.2-1.	-	-	-	-
4	Check: Does the UE transmit a *MeasurementReport* message to report event A3 (*measId* 1) with the measured RSRP value for Cell 2?	-->	*MeasurementReport*	1	P
5	SS re-adjusts the cell-specific reference signal level according to row "T2" in table 8.3.1.12.3.2-1.	-	-	-	-
6	Check: Does the UE transmit a *MeasurementReport* message to report event A3 (*measId* 2) with the measured RSRP value for Cell 10?	-->	*MeasurementReport*	1	P

8.3.1.12.3.3 Specific message contents

Table 8.3.1.12.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.12.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.12.3.3-2: *MeasConfig* (step 1, Table 8.3.1.12.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1, condition INTER-FREQ			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f5		
measObject[2]	MeasObjectEUTRA-GENERIC(f5)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfig-A3-H		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3		
measId[2]	2		
measObjectId[2]	IdMeasObject-f5		
reportConfigId[2]	IdReportConfig-A3		
}			
}			

Table 8.3.1.12.3.3-3: *ReportConfig-A3-H* (step 1, Table 8.3.1.12.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
timeToTrigger	ms0		
}			
}			
reportQuantity	sameAsTriggerQuantity		
}			

Table 8.3.1.12.3.3-4: *MeasurementReport* (step 4, Table 8.3.1.12.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
MeasResultEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 2	
physCellId	physCellId of the Cell 2.		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

Table 8.3.1.12.3.3-5: MeasurementReport (step 6, Table 8.3.1.12.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
MeasResultEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 10	
physCellId	physCellId of the Cell 10.		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

8.3.1.12a Measurement configuration control and reporting / Intra E-UTRAN measurements / Two simultaneous events A3 (inter-band measurements) / Between FDD and TDD

8.3.1.12a.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA FDD RRC_CONNECTED state and measurements configured for two event A3 at the same
time for E-UTRA TDD cell }
ensure that {
  when { Entry condition for event A3 is not met }
   then { UE does not send MeasurementReport }
}
```

(2)

```
with { UE in E-UTRA FDD RRC_CONNECTED state and measurements configured for two event A3 at the same
time for E-UTRA TDD cell }
ensure that {
  when { Neighbour E-UTRA TDD cell becomes offset better than serving E-UTRA FDD cell }
   then { UE sends MeasurementReport with correct measId for event A3 }
}
```

(3)

```
with { UE in E-UTRA TDD RRC_CONNECTED state and measurements configured for two event A3 at the same
time for E-UTRA FDD cell }
ensure that {
  when { Entry condition for event A3 is not met }
   then { UE does not send MeasurementReport }
}
```

(4)

```
with { UE in E-UTRA TDD RRC_CONNECTED state and measurements configured for two event A3 at the same
time for E-UTRA FDD cell }
ensure that {
  when { Neighbour E-UTRA FDD cell becomes offset better than serving E-UTRA TDD cell }
   then { UE sends MeasurementReport with correct measId for event A3 }
}
```

8.3.1.12a.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.4.1, 5.5.4.4 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> If the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the Measurement configuration procedure as specified in 5.5.2;

...

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the corresponding *reportConfig* includes a purpose set to '*reportStrongestCellsForSON*':

3> consider any neighbouring cell detected on the associated frequency to be applicable;

2> else if the corresponding *reportConfig* includes a purpose set to '*reportCGI*':

3> consider any neighbouring cell detected on the associated frequency/ set of frequencies (GERAN) which has a physical cell identity matching the value of the *cellForWhichToReportCGI* included in the corresponding *measObject* within the *VarMeasConfig* to be applicable;

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the *VarMeasConfig* for this *measId*;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *purpose is* included and set to '*reportCGI*' and if the UE acquired the information needed to set all fields of *cellGlobalId* for the requested cell:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> stop timer T321;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> upon expiry of the T321 for this *measId*:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

NOTE 3: If the UE is configured with DRX, the UE may delay the measurement reporting for event triggered and periodical triggered measurements until the Active Time, which is defined in TS 36.321 [6].

[TS 36.331, clause 5.5.4.4]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A3-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A3-2, as specified below, is fulfilled;

Inequality A3-1 (Entering condition):

$$Mn + Ofn + Ocn - Hys > Ms + Ofs + Ocs + Off$$

Inequality A3-2 (Leaving condition):

$$Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off$$

The variables in the formula are defined as follows:

Mn is the measurement result of the neighbouring cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the neighbour cell (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell).

Ocn is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.

Ms is the measurement result of the serving cell, not taking into account any offsets.

Ofs is the frequency specific offset of the serving frequency (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the serving frequency).

Ocs is the cell specific offset of the serving cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the serving frequency), and is set to zero if not configured for the serving cell.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Off is the offset parameter for this event (i.e. *a3-Offset* as defined within *reportConfigEUTRA* for this event).

Mn, Ms are expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Ofn, Ocn, Ofs, Ocs, Hys, Off are expressed in dB.

[TS 36.331, clause 5.5.5]

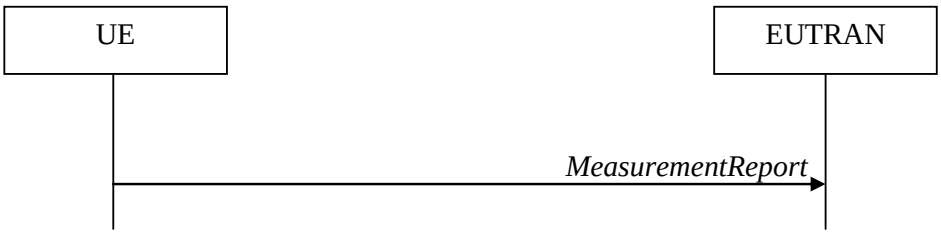

Figure 5.5.5-1: Measurement reporting

The purpose of this procedure is to transfer measurement results from the UE to E-UTRAN.

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of decreasing quantity, i.e. the best cell is included first;

3> else if the *purpose* is set to '*reportCGI*':

4> if the mandatory present fields of the *cellGlobalId* for the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* have been obtained:

5> include the *cgi-Info* containing all the fields that have been successfully acquired;

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

1> else:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasReportList* for this *measId*;

3> remove this *measId* from the *measIdList* within *VarMeasConfig*;

1> if the measured results are for CDMA2000 HRPD:

2> set the *preRegistrationStatusHRPD* to the UE's CDMA2000 upper layer's HRPD *preRegistrationStatus*;

1> if the measured results are for CDMA2000 1xRTT:

2> set the *preRegistrationStatusHRPD* to 'FALSE';

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.1.12a.3 Test description

8.3.1.12a.3.1 Pre-test conditions

System Simulator:

- Cell 1 is LTE FDD cell, Cell 28 is LTE TDD cell.

- Each cell has only a single PLMN identity. The PLMNs are identified in the test by the identifiers in Table 8.3.1.12a.3.1-1.

Table 8.3.1.12a.3.1-1: PLMN identifiers

Cell	PLMN name
1	PLMN1
28	PLMN2

- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 and Table 6.3.1.2-2 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is registered on PLMN1 (Cell 1) using the procedure described in TS 36.508[18] clause 4.5.2.3 except that the ATTACH ACCEPT message indicates PLMN2 in the Equivalent PLMN list as described in Table 8.3.1.12a.3.3-15.

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18]

8.3.1.12a.3.2 Test procedure sequence

Table 8.3.1.12a.3.2-1 illustrates the downlink power levels to be applied for Cell 1 and Cell 2 at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while rows marked "T1", "T2", "T3", "T4" and "T5" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.12a.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 28	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-85	-110	The power levels are such that that measurement results for Cell 1 (M1) and Cell 28 (M28) satisfy exit condition for event A3 (*measId* 1 & 2) (M28 < M1). $Mn+Ofn+Ocn+Hys < Ms+Ofs+Ocs+Off$
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	-91	The power levels are such that measurement results for Cell 1 (M1) and Cell 28 (M28) satisfy entry condition for event A3 (*measId* 1) (M28 > M1): $Mn+Ofn+Ocn-Hys > Ms+Ofs+Ocs+Off$
T2	Cell-specific RS EPRE	dBm/15 kHz	-85	-73	The power levels are such that measurement results for Cell 1 (M1) and Cell 28 (M28) satisfy entry condition for event A3 (*measId* 2) (M28 > M1): $Mn+Ofn+Ocn-Hys > Ms+Ofs+Ocs+Off$
T3	Cell-specific RS EPRE	dBm/15 kHz	-110	-85	The power levels are such that that measurement results for Cell 1 (M1) and Cell 28 (M28) satisfy exit condition for event A3 (*measId* 1 & 2) (M1 < M28): $Mn+Ofn+Ocn+Hys < Ms+Ofs+Ocs+Off$
T4	Cell-specific RS EPRE	dBm/15 kHz	-91	-85	The power levels are such that measurement results for Cell 1 (M1) and Cell 28 (M28) satisfy entry condition for event A3 (*measId* 1) (M1 > M28): $Mn+Ofn+Ocn-Hys > Ms+Ofs+Ocs+Off$
T5	Cell-specific RS EPRE	dBm/15 kHz	-73	-85	The power levels are such that measurement results for Cell 1 (M1) and Cell 28 (M28) satisfy entry condition for event A3 (*measId* 2) (M1 > M28): $Mn+Ofn+Ocn-Hys > Ms+Ofs+Ocs+Off$

Table 8.3.1.12a.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including *MeasConfig* to setup inter-band measurement and reporting for two event A3 (*measId* 1 and *measId* 2) with different parameters for E-UTRA TDD Cell 28.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE transmit a *MeasurementReport* message within the next 10s?	-->	*MeasurementReport*	1	F
4	SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.12a.3.2-1.	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message to report event A3 (*measId* 1) with the measured RSRP value for Cell 28?	-->	*MeasurementReport*	2	P
6	SS re-adjusts the cell-specific reference signal level according to row "T2" in table 8.3.1.12a.3.2-1.	-	-	-	-
7	Check: Does the UE transmit a *MeasurementReport* message to report event A3 (measId 2) with the measured RSRP value for Cell 28?	-->	*MeasurementReport*	2	P
-	EXCEPTION: Steps 8a1 to 8b5 describe behaviour that depends on the UE capability that if UE has set FGI bit 30 to 1; the "lower case letter" identifies a step sequence that takes place if a capability is supported.	-	-	-	-
8a1	IF pc_FeatrGrp_30 THEN the SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to order the UE to perform inter-band handover to Cell 28.	<--	*RRCConnectionReconfiguration*	-	-
8a2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 28 to confirm the successful handover	-->	*RRCConnectionReconfigurationComplete*	-	-
8a3	The UE transmits a TRACKING AREA UPDATE REQUEST message on Cell 28.	-	-	-	-
8a4	SS responds with a TRACKING AREA UPDATE ACCEPT message. NOTE: The TAU is accepted with PLMN1 listed as an Equivalent PLMN	-	-	-	-
8a5	The UE transmits a TRACKING AREA UPDATE COMPLETE message.	-	-	-	-
8a6	The SS transmits an *RRCConnectionReconfiguration* message to activate the measurement gaps on Cell 28.	<--	*RRCConnectionReconfiguration*	-	-
8a7	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the activation of the measurement gaps on Cell 28.	-->	*RRCConnectionReconfigurationComplete*	-	-
8b1	ELSE IF NOT pc_FeatrGrp_30 THEN the SS transmits an *RRCConnectionRelease* message (IE *redirectedCarrierInfo* including eutra CarrierFreq of Cell 28) on Cell 1	<--	*RRCConnectionRelease*	-	-
8b2	Generic test procedure described in TS 36.508 subclause 6.4.2.7 is performed on Cell 28 NOTE: The TAU is accepted with PLMN1 listed as an Equivalent PLMN	-	-	-	-
8b3	Generic test procedure described in TS 36.508 subclause 4.5.3.3.is executed	-	-	-	-

8b4	The SS transmits an *RRCConnectionReconfiguration* message including *MeasConfig* to setup inter-band measurement and reporting for two event A3 (*measId* 1 and *measId* 2) with different parameters for E-UTRA FDD Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
8b5	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
9	SS re-adjusts the cell-specific reference signal level according to row "T3" in table 8.3.1.12a.3.2-1.	-	-	-	-
10	Check: Does the UE transmit a *MeasurementReport* message within the next 10s?	-->	*MeasurementReport*	3	F
11	SS re-adjusts the cell-specific reference signal level according to row "T4" in table 8.3.1.12a.3.2-1.	-	-	-	-
12	Check: Does the UE transmit a *MeasurementReport* message to report event A3 (*measId* 1) with the measured RSRP value for Cell 1?	-->	*MeasurementReport*	4	P
13	SS re-adjusts the cell-specific reference signal level according to row "T5" in table 8.3.1.12a.3.2-1.	-	-	-	-
14	Check: Does the UE transmit a *MeasurementReport* message to report event A3 (measId 2) with the measured RSRP value for Cell 1?	-->	*MeasurementReport*	4	P

8.3.1.12a.3.3 Specific message contents

Table 8.3.1.12a.3.3-1: *RRCConnectionReconfiguration* (step 1 and step 8b4, Table 8.3.1.12a.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.12a.3.3-2: *MeasConfig* (step 1, Table 8.3.1.12a.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1, condition INTER-FREQ			
Information Element	Value/Remark	Comment	Condition
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f6		
measObject[2]	MeasObjectEUTRA-GENERIC(f6)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	2 entries		
reportConfigId[1]	1		
reportConfig[1]	ReportConfig-A3-Lowerthreshold		
reportConfigId[2]	2		
reportConfig[2]	ReportConfig-A3-Higherthreshold		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f6		
reportConfigId[1]	IdReportConfig-A3-Lowerthreshold		
measId[2]	2		
measObjectId[2]	IdMeasObject-f6		
reportConfigId[2]	IdReportConfig-A3-Higherthreshold		
}			
}			

Table 8.3.1.12a.3.3-3: *ReportConfig-A3-Lowerthreshold* (step 1 and step 8b4, Table 8.3.1.12a.3.2-2)

Derivation path: 36.508 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	-24	-12 dB	
}			
}			
timeToTrigger	ms0		
}			
}			
reportQuantity	sameAsTriggerQuantity		
}			

Table 8.3.1.12a.3.3-4: *ReportConfig-A3-Higherthreshold* (step 1 and step 8b4, Table 8.3.1.12a.3.2-2)

Derivation path: 36.508 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	
}			
}			
timeToTrigger	ms0		
}			
}			
reportQuantity	sameAsTriggerQuantity		
}			

Table 8.3.1.12a.3.3-5: MeasurementReport (step 5, Table 8.3.1.12a.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
MeasResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
MeasResultEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 28	
physCellId	PhysCellId of the Cell 28		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.12a.3.3-6: *MeasurementReport* (step 7, Table 8.3.1.12a.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
MeasResults ::= SEQUENCE {			
measId	2		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
MeasResultEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 28	
physCellId	PhysCellId of the Cell 28		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.12a.3.3-7: *RRCConnectionReconfiguration* (step 8a1, Table 8.3.1.12a.3.2-2)

Derivation path: 36.508 Table 4.6.1-8, condition HO

Table 8.3.1.12a.3.3-8: *MobilityControlInfo* (step 8a1, Table 8.3.1.12a.3.3-7)

Derivation Path: 36.508 Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 28		
carrierFreq SEQUENCE {			
dl-CarrierFreq	Same downlink EARFCN as used for Cell 28		
ul-CarrierFreq	Not present		
}			
}			

Table 8.3.1.12a.3.3-9: *RRCConnectionReconfiguration* (step 8a6, Table 8.3.1.12a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.1.12a.3.3-10: *MeasConfig* (step 8a6, Table 8.3.1.12a.3.3-9)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ

Table 8.3.1.12a.3.3-11: MeasurementReport (step 12, Table 8.3.1.12a.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
MeasResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 28	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
MeasResultEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 1	
physCellId	PhysCellId of the Cell 1		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.12a.3.3-12: *MeasurementReport* (step 14, Table 8.3.1.12a.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
MeasResults ::= SEQUENCE {			
measId	2		
measResultServCell ::= SEQUENCE {		Report Cell 28	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
MeasResultEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 1	
physCellId	PhysCellId of the Cell 1		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.12a.3.3-13: *RRCConnectionRelease* (step 8b1, Table 8.3.1.12a.3.2-2)

Derivation Path: 36.508 table 4.6.1-15			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRelease ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
rrcConnectionRelease-r8 SEQUENCE {			
redirectedCarrierInfo ::= CHOICE {			
eutra	Downlink EARFCN of cell Cell 28		
}			
}			
}			
}			
}			

Table 8.3.1.12a.3.3-14: *MeasConfig* (step 8b4, Table 8.3.1.12a.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1, condition INTER-FREQ			
Information Element	Value/Remark	Comment	Condition
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f6		
measObject[1]	MeasObjectEUTRA-GENERIC(f6)		
measObjectId[2]	IdMeasObject-f1		
measObject[2]	MeasObjectEUTRA-GENERIC(f1)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	2 entries		
reportConfigId[1]	1		
reportConfig[1]	ReportConfig-A3-Lowerthreshold		
reportConfigId[2]	2		
reportConfig[2]	ReportConfig-A3-Higherthreshold		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3-Lowerthreshold		
measId[2]	2		
measObjectId[2]	IdMeasObject-f1		
reportConfigId[2]	IdReportConfig-A3-Higherthreshold		
}			
}			

Table 8.3.1.12a.3.3-15: ATTACH ACCEPT for Cell 1 (preamble)

Derivation path: 36.508 Table 4.7.2-1			
Information Element	**Value/Remark**	**Comment**	**Condition**
Equivalent PLMNs	PLMN2		Cell 1

Table 8.3.1.12a.3.3-16: TRACKING AREA UPDATE ACCEPT for Cell 28 (steps 8a4 and 8b5, Table 8.3.1.12a.3.2-2)

Derivation path: 36.508 Table 4.7.2-24			
Information Element	**Value/Remark**	**Comment**	**Condition**
Equivalent PLMNs	PLMN1		Cell 28

8.3.1.13 Measurement configuration control and reporting / Intra E-UTRAN measurements / Periodic reporting (intra-frequency and inter-band measurements)

8.3.1.13.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurement configured for periodic reporting of intra-
frequency cells and inter-band cells }
ensure that {
  when { The UE receives reference signal power for cells on the serving frequency and cells on the
frequency where measurements are configured }
   then { UE sends MeasurementReport message at regular intervals for these cells }
}
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and a MeasurementReport message for a configured periodic
measurement reporting of intra-frequency and inter-band cells was sent }
ensure that {
  when { A previously reported cell become unavailable or the UE receives reference signal power on
a reported frequency for a cell which was previously not reported }
   then { UE sends MeasurementReport message at regular intervals for the available intra-frequency
and inter-band cells }
}
```

(3)

```
with { UE in E-UTRA RRC_CONNECTED state and periodic measurement reporting ongoing}
ensure that {
  when { The UE receives a RRCConnectionReconfiguration message removing measIds for periodic
reporting }
   then { UE stops sending MeasurementReport messages for these measIds }
}
```

8.3.1.13.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.2.2, 5.5.4.1 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> If the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the Measurement configuration procedure as specified in 5.5.2;

...

[TS 36.331, clause 5.5.2.2]

The UE shall:

1> for each *measId* value included in the received *measIdToRemoveList* that is part of the current UE configuration in *varMeasConfig*:

2> remove the entry with the matching *measId* from the *measIdList* within the *VarMeasConfig*;

2> remove the measurement reporting entry for this *measId* from the *VarMeasReportList*, if included;

2> stop the periodical reporting timer or timer T321, whichever one is running, and reset the associated information (e.g. *timeToTrigger*) for this *measId*;

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

…

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

…

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

…

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

...

[TS 36.331, clause 5.5.5]

…

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measuredResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultsNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE 3: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultsNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

…

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than to *reportAmount* as defined corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

...

1> submit the MEASUREMENT REPORT message to lower layers for transmission, upon which the procedure ends.

8.3.1.13.3 Test description

8.3.1.13.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 2, and Cell 10
- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) according to [18] on Cell 1.

8.3.1.13.3.2 Test procedure sequence

Table 8.3.1.13.3.2-1 illustrates the downlink power levels to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while rows marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.13.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 2 (DL only)	Cell 10 (DL only)	Remark
T0	Cell-specific RS EPRE	dBm/ 15kHz	-85	-91	Off	
T1	Cell-specific RS EPRE	dBm/ 15kHz	-85	-91	-85	
T2	Cell-specific RS EPRE	dBm/ 15kHz	-85	Off	-85	

Table 8.3.1.13.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup intra LTE measurements and periodical reporting for intra and inter-band cells.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Void	-	-	-	-
-	EXCEPTION: In parallel to events described in step 4 the steps specified in table 8.3.1.13.3.2-3, and the table 8.3.1.13.3.2-4A shall take place				
4	Wait for 30 s to ensure that the UE performs a periodical intra-frequency reporting and a periodical inter-band reporting.	-	-	1	-
5	SS sets the cell-specific reference signal levels and switches Cell 10 “On” according to row "T1" in table 8.3.1.13.3.2-1.	-	-	-	-
6	Wait and ignore *MeasurementReport* messages for 8s to allow for the switching of cells and the UE measurement.	-	-	-	-
-	EXCEPTION: In parallel to events described in step 7 the steps specified in table 8.3.1.13.3.2-3, and table 8.3.1.13.3.2-4 shall take place.				
7	Wait for 30 s to ensure that the UE performs a periodical intra-frequency reporting and a periodical inter-band reporting.	-	-	1, 2	-
8	SS sets the cell-specific reference signal levels and switches Cell 2 “Off” according to row "T2" in table 8.3.1.13.3.2-1.	-	-	-	-
9	Wait and ignore *MeasurementReport* messages for 20 s to allow for the switching of cells and UE measurement.	-	-	-	-
-	EXCEPTION: In parallel to events described in steps 9 to 11 the steps specified in table 8.3.1.13.3.2-3A and the table 8.3.1.13.3.2-4 shall take place	-	-	-	-
10	Wait for 30 s to ensure that the UE performs a periodical intra-frequency reporting and a periodical inter-band reporting.	-	-	1, 2	-
11	SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to remove measIds for periodical reporting.	<--	*RRCConnectionReconfiguration*	-	-
12	The UE transmits an *RCConnectionReconfigurationComplete* message	-->	*RRCConnectionReconfigurationComplete*	-	-
13	Check: Does the UE attempt to transmit an uplink message for the next 10s?	-	-	3	F

Table 8.3.1.13.3.2-3: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: After the 1st message is received, step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical intra-frequency reporting for Cell 2(NOTE1)?	-->	*MeasurementReport*	1	P

NOTE 1: In the first report UE may not include measResultNeighCells for cell 2.

Table 8.3.1.13.3.2-3A: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: After the 1st message is received, step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical intra-frequency reporting configured for cell 2 and without measResultNeighCells for the cell 2?	-->	*MeasurementReport*	1	P

Table 8.3.1.13.3.2-4: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: After the 1st message is received, step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical inter-band reporting for Cell 10(NOTE2)?	-->	*MeasurementReport*	1	P

NOTE 2: In the first report UE may not include measResultNeighCells for the cell 10.

Table 8.3.1.13.3.2-4A: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: After the 1st message is received, step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical inter-band reporting configured for cell 10 and without measResultNeighCells for the cell 10?	-->	*MeasurementReport*	1	P

8.3.1.13.3.3 Specific message contents

Table 8.3.1.13.3.3-1: *RRCConnectionReconfiguration* (step 1 and step 11, Table 8.3.1.13.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.13.3.3-2: *MeasConfig* (step 1, Table 8.3.1.13.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f5		
measObject[2]	MeasObjectEUTRA-GENERIC(f5)		
}			
reportConfigToAddModiList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-PERIODICAL		
reportConfig[1]	ReportConfigEUTRA-PERIODICAL		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-PERIODICAL		
measId[2]	2		
measObjectId[2]	IdMeasObject-f5		
reportConfigId[2]	IdReportConfig-PERIODICAL		
}			
}			

Table 8.3.1.13.3.3-4: *MeasConfig* (step 11, Table 8.3.1.13.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measIdToRemoveList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
MeasId[1]	1		
MeasId[2]	2		
}			
}			

Table 8.3.1.13.3.3-5: *MeasurementReport* (step 1, Table 8.3.1.13.3.2-3)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 2	
physCellId [1]	physicalCellIdentity-Cell2		
measResult [1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

Table 8.3.1.13.3.3-5A: *MeasurementReport* (step 1, Table 8.3.1.13.3.2-3A)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {}	Not present		
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

Table 8.3.1.13.3.3-6: MeasurementReport (step 1, Table 8.3.1.13.3.2-4)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 10	
physCellId [1]	physicalCellIdentity-Cell10		
measResult [1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

Table 8.3.1.13.3.3-6A: *MeasurementReport* (step 1, Table 8.3.1.13.3.2-4A)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {}	Not present		
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

8.3.1.13a Measurement configuration control and reporting / Intra E-UTRAN measurements / Periodic reporting (intra-frequency and inter-band measurements) / Between FDD and TDD

8.3.1.13a.1 Test Purpose (TP)

(1)

with { UE in E-UTRA FDD RRC_CONNECTED state and measurement configured for periodic reporting of intra frequency cells and inter-band E-UTRA TDD cells on specified frequency }

```
ensure that {
  when { The UE receives reference signal power for cells on the serving frequency and cells on the
frequency where measurements are configured }
    then { UE sends MeasurementReport message at regular intervals for these cells }
}
```

(2)

```
with { UE in E-UTRA FDD RRC_CONNECTED state and a MeasurementReport message for a configured
periodic measurement reporting of intra frequency and inter-band E-UTRA TDD cells was sent }
ensure that {
  when { A previously reported cell becomes unavailable or the UE receives reference signal power on
a reported frequency for a cell which was previously not reported }
    then { UE sends MeasurementReport message at regular intervals for the available intra frequency
and inter-band E-UTRA TDD cells }
}
```

(3)

```
with { UE in E-UTRA FDD RRC_CONNECTED state and periodic measurement reporting ongoing }
ensure that {
  when { The UE receives a RRCConnectionReconfiguration message removing measIds for periodic
reporting }
    then { UE stops sending MeasurementReport messages for these measIds }
}
```

(4)

```
with { UE in E-UTRA TDD RRC_CONNECTED state and measurement configured for periodic reporting of
intra frequency cells and inter-band E-UTRA FDD cells on specified frequency }
ensure that {
  when { The UE receives reference signal power for cells on the serving frequency and cells on the
frequency where measurements are configured }
    then { UE sends MeasurementReport message at regular intervals for these cells }
}
```

(5)

```
with { UE in E-UTRA TDD RRC_CONNECTED state and a MeasurementReport message for a configured
periodic measurement reporting of intra frequency and inter-band E-UTRA FDD cells was sent }
ensure that {
  when { A previously reported cell becomes unavailable or the UE receives reference signal power on
a reported frequency for a cell which was previously not reported }
    then { UE sends MeasurementReport message at regular intervals for the available intra frequency
and inter-band E-UTRA FDD cells }
}
```

(6)

```
with { UE in E-UTRA TDD RRC_CONNECTED state and periodic measurement reporting ongoing }
ensure that {
  when { The UE receives a RRCConnectionReconfiguration message removing measIds for periodic
reporting }
    then { UE stops sending MeasurementReport messages for these measIds }
}
```

8.3.1.13a.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.2.2, 5.5.4.1 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> If the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the Measurement configuration procedure as specified in 5.5.2;

...

[TS 36.331, clause 5.5.2.2]

The UE shall:

1> for each *measId* value included in the received *measIdToRemoveList* that is part of the current UE configuration in *varMeasConfig*:

2> remove the entry with the matching *measId* from the *measIdList* within the *VarMeasConfig*;

2> remove the measurement reporting entry for this *measId* from the *VarMeasReportList*, if included;

2> stop the periodical reporting timer or timer T321, whichever one is running, and reset the associated information (e.g. *timeToTrigger*) for this *measId*;

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

…

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

…

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

…

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

...

[TS 36.331, clause 5.5.5]

…

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measuredResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultsNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE 3: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultsNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

…

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than to *reportAmount* as defined corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

...

1> submit the MEASUREMENT REPORT message to lower layers for transmission, upon which the procedure ends.

8.3.1.13a.3 Test description

8.3.1.13a.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 2 and Cell 4 are E-UTRA FDD cells, Cell 10 and Cell 30 are E-UTRA TDD cells.
- Each cell has only a single PLMN identity. The PLMNs are identified in the test by the identifiers in Table 8.3.1.13 a.3.1-1.

Table 8.3.1.13a.3.1-1: PLMN identifiers

Cell	PLMN name
1	PLMN1
2	PLMN1
4	PLMN1
10	PLMN1
30	PLMN2

- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 and Table 6.3.1.2-2 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is registered on PLMN1 (Cell 1) using the procedure described in TS 36.508[18] clause 4.5.2.3 except that the ATTACH ACCEPT message indicates PLMN2 in the Equivalent PLMN list as described in Table 8.3.1.13a.3.3-16.

- The UE is in state Generic RB Established (state 3) according to [18] on Cell 1.

8.3.1.13a.3.2 Test procedure sequence

Table 8.3.1.13a.3.2-1 illustrates the downlink power levels to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while rows marked "T1", "T2", "T3" and "T4", are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.13a.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 2(DL only)	Cell 4(DL only)	Cell 10(DL only)	Cell 30	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	-91	Off	-85	Off	
T1	Cell-specific RS EPRE	dBm/15kHz	-85	Off	-91	-85	Off	
T2	Cell-specific RS EPRE	dBm/15kHz	-85	Off	-91	Off	-73	
T3	Cell-specific RS EPRE	dBm/15kHz	Off	-91	Off	-91	-85	
T4	Cell-specific RS EPRE	dBm/15kHz	Off	Off	-91	-91	-85	

Table 8.3.1.13a.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup intra LTE measurements and periodical reporting for intra frequency and inter-band cells.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
2A	Wait and ignore *MeasurementReport* messages for 8 s to allow for the switching of the cells and UE to measure the neighbouring cells.	-	-	-	-
-	EXCEPTION: In parallel to events described in step 3 the steps specified in table 8.3.1.13a.3.2-3 and table 8.3.1.13a.3.2-5 shall take place				
3	Wait for 30 s to ensure that the UE performs a periodical intra frequency reporting for Cell 2 and a periodical inter-band reporting for Cell 10.	-	-	1	-
4	SS re-adjusts the cell-specific reference signal levels according to row "T1" in table 8.3.1.13a.3.2-1.	-	-	-	-
5	Wait and ignore *MeasurementReport* messages for 8 s to allow for the switching of Cell 2 and UE to measure the neighbouring cells.	-	-	-	-
-	EXCEPTION: In parallel to events described in step 6 the steps specified in table 8.3.1.13a.3.2-4 and table 8.3.1.13a.3.2-5 shall take place.				
6	Wait for 30 s to ensure that the UE performs a periodical intra frequency reporting for Cell 4 and a periodical inter-band reporting for Cell 10.	-	-	1, 2	-
7	SS re-adjusts the cell-specific reference signal levels according to row "T2" in table 8.3.1.13a.3.2-1.	-	-	-	-
8	Wait and ignore *MeasurementReport* messages for 8 s to allow for the switching of Cell 10 and UE to measure the neighbouring cells.	-	-	-	-
-	EXCEPTION: In parallel to events described in steps 9 to 11 the steps specified in table 8.3.1.13a.3.2-4 and table 8.3.1.13a.3.2-9 shall take place	-	-	-	-
9	Wait for 30 s to ensure that the UE performs a periodical intra frequency reporting for Cell 4 and a periodical inter-band reporting for Cell 30.	-	-	1, 2	-
10	SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to remove measIds for periodical reporting.	<--	*RRCConnectionReconfiguration*	-	-
11	The UE transmits an *RRCConnectionReconfigurationComplete* message	-->	*RRCConnectionReconfigurationComplete*	-	-
12	Check: Does the UE attempt to transmit an uplink message for the next 10s?	-	-	3	F
-	EXCEPTION: Steps 13a1 to 13b3describe behaviour that depends on the UE capability that if UE has set FGI bit 30 to 1; the "lower case letter" identifies a step sequence that takes place if a capability is supported.	-	-	-	-

13a 1	IF pc_FeatrGrp_30 THEN the SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to order the UE to perform inter band handover to Cell 30.	<--	*RRCConnectionReconfiguration*	-	-
13a 2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 30 to confirm the handover	-->	*RRCConnectionReconfigurationComplete*	-	-
13a 3	The UE transmits a TRACKING AREA UPDATE REQUEST message on Cell 30.	-	-	-	-
13a 4	SS responds with a TRACKING AREA UPDATE ACCEPT message. NOTE: The TAU is accepted with PLMN1 listed as an Equivalent PLMN	-	-	-	-
13a 5	The UE transmits a TRACKING AREA UPDATE COMPLETE message.	-	-	-	-
13b 1	ELSE IF NOT pc_FeatrGrp_30 THEN the SS transmits an *RRCConnectionRelease* message (IE *redirectedCarrierInfo* including eutra CarrierFreq of Cell 30) on Cell 1	<--	*RRCConnectionRelease*	-	-
13b 2	The generic test procedure described in TS 36.508 subclause 6.4.2.7 is performed on Cell 30 NOTE: The TAU is accepted with PLMN1 listed as an Equivalent PLMN	-	-	-	-
13b 3	Generic test procedure described in TS 36.508 subclause 4.5.3.3.is executed	-	-	-	-
14	SS re-adjusts the cell-specific reference signal levels according to row "T3" in table 8.3.1.13a.3.2-1.	-	-	-	-
15	SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup intra LTE measurements and periodical reporting for intra frequency and inter-band cells.	<--	*RRCConnectionReconfiguration*	-	-
16	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
16 A	Wait and ignore *MeasurementReport* messages for 8 s to allow for the switching of Cell 4 and UE to measure the neighbouring cells.	-	-	-	-
-	EXCEPTION: In parallel to events described in step 17 the steps specified in table 8.3.1.13a.3.2-6 and table 8.3.1.13a.3.2-8 shall take place.				
17	Wait for 30 s to ensure that the UE performs a periodical intra frequency reporting for Cell 10 and a periodical inter-band reporting for Cell 2.	-	-	4,5	-
18	SS re-adjusts the cell-specific reference signal levels according to row "T4" in table 8.3.1.13a.3.2-1.	-	-	-	-
19	Wait and ignore *MeasurementReport* messages for 8 s to allow for the switching of Cell2 and UE to measure the neighbouring cells.	-	-	-	-
-	EXCEPTION: In parallel to events described in steps 21 to 22 the steps specified in table 8.3.1.13a.3.2-7 and table 8.3.1.13a.3.2-8 shall take place	-	-	-	-
20	Wait for 30 s to ensure that the UE performs a periodical intra frequency reporting for Cell 10 and a periodical inter-band reporting for Cell 4.	-	-	4,5	-
21	SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to remove measIds for periodical reporting.	<--	*RRCConnectionReconfiguration*	-	-
22	The UE transmits an *RRCConnectionReconfigurationComplete*	-->	*RRCConnectionReconfigurationComplete*	-	-

	message				
23	Check: Does the UE attempt to transmit an uplink message for the next 10s?	-	-	6	F

Table 8.3.1.13a.3.2-3: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: After the 1st message is received, step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical intra frequency reporting for Cell 2(NOTE1)?	-->	*MeasurementReport*	1	P

NOTE 1: In the first report UE may not include measResultNeighCells for cell 2.

Table 8.3.1.13a.3.2-4: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: Step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical intra frequency reporting for Cell 4(NOTE2)?	-->	*MeasurementReport*	1, 2	P

NOTE 2: In the first report UE may not include measResultNeighCells for the cell 4.

Table 8.3.1.13a.3.2-5: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: After the 1st message is received, step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical inter-band reporting for Cell 10(NOTE3)?	-->	*MeasurementReport*	1	P

NOTE 3: In the first report UE may not include measResultNeighCells for the cell 10.

Table 8.3.1.13a.3.2-6: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: After the 1st message is received, step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical inter band reporting for Cell 2(NOTE4)?	-->	*MeasurementReport*	4	P

NOTE 4: In the first report UE may not include measResultNeighCells for cell 2.

Table 8.3.1.13a.3.2-7: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: Step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical inter band reporting for Cell 4(NOTE5)?	-->	*MeasurementReport*	4,5	P

NOTE 5: In the first report UE may not include measResultNeighCells for the cell 4.

Table 8.3.1.13a.3.2-8: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: After the 1st message is received, step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical intra frequency reporting for Cell 10(NOTE6)?	-->	*MeasurementReport*	4	P

NOTE 6: In the first report UE may not include measResultNeighCells for the cell 10.

Table 8.3.1.13a.3.2-9: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: After the 1st message is received, step 1 below shall be repeated every time the duration indicated in the IE reportInterval has elapsed.	-	-	-	-
1	Check: Does the UE transmit a MeasurementReport message to perform periodical inter band reporting for Cell 30(NOTE7)?	-->	MeasurementReport	1, 2	P

NOTE 7: In the first report UE may not include measResultNeighCells for the cell 30.

8.3.1.13a.3.3 Specific message contents

Table 8.3.1.13a.3.3-1: *RRCConnectionReconfiguration* (step 1, step10, step 15 and step 21, Table 8.3.1.13a.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.13a.3.3-2: *MeasConfig* (step 1, Table 8.3.1.13a.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f5		
measObject[2]	MeasObjectEUTRA-GENERIC(f5)		
}			
reportConfigToAddModiList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-PERIODICAL		
reportConfig[1]	ReportConfigEUTRA-PERIODICAL		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-PERIODICAL		
measId[2]	2		
measObjectId[2]	IdMeasObject-f5		
reportConfigId[2]	IdReportConfig-PERIODICAL		
}			
}			

Table 8.3.1.13a.3.3-3: *MeasConfig* (step 10, Table 8.3.1.13a.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measIdToRemoveList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
MeasId[1]	1		
MeasId[2]	2		
}			
}			

Table 8.3.1.13a.3.3-4: *MeasurementReport* (step 1, Table 8.3.1.13a.3.2-3)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 2	
physCellId [1]	physicalCellIdentity-Cell2		
measResult [1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.13a.3.3-5: *MeasurementReport* (step 1, Table 8.3.1.13a.3.2-4)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 4	
physCellId [1]	physicalCellIdentity-Cell4		
measResult [1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			

Table 8.3.1.13a.3.3-6: MeasurementReport (step 1, Table 8.3.1.13a.3.2-5)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 10	
physCellId [1]	physicalCellIdentity-Cell10		
measResult [1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.13a.3.3-7: *RRCConnectionReconfiguration* (step 13a1, Table 8.3.1.13a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition HO

Table 8.3.1.13a.3.3-8: *MobilityControlInfo* (step 13a1, Table 8.3.1.13a.3.2-2)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 30		
carrierFreq SEQUENCE {			
dl-CarrierFreq	Same downlink EARFCN as used for Cell 30		
ul-CarrierFreq	Not present		
}			
}			

Table 8.3.1.13a.3.3-9: *MeasConfig* (step 15, Table 8.3.1.13a.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f5		
measObject[1]	MeasObjectEUTRA-GENERIC(f5)		
measObjectId[2]	IdMeasObject-f1		
measObject[2]	MeasObjectEUTRA-GENERIC(f1)		
}			
reportConfigToAddModiList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-PERIODICAL		
reportConfig[1]	ReportConfigEUTRA-PERIODICAL		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f5		
reportConfigId[1]	IdReportConfig-PERIODICAL		
measId[2]	2		
measObjectId[2]	IdMeasObject-f1		
reportConfigId[2]	IdReportConfig-PERIODICAL		
}			
}			

Table 8.3.1.13a.3.3-10: *MeasConfig* (step 21, Table 8.3.1.13a.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measIdToRemoveList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
MeasId[1]	1		
MeasId[2]	2		
}			
}			

Table 8.3.1.13a.3.3-11: *MeasurementReport* (step 1, Table 8.3.1.13a.3.2-6)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell ::= SEQUENCE {		Report Cell 30	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 2	
physCellId [1]	physicalCellIdentity-Cell2		
measResult [1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.13a.3.3-12: *MeasurementReport* (step 1, Table 8.3.1.13a.3.2-7)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell ::= SEQUENCE {		Report Cell 30	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 4	
physCellId [1]	physicalCellIdentity-Cell4		
measResult [1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			

Table 8.3.1.13a.3.3-13: *MeasurementReport* (step 1, Table 8.3.1.13a.3.2-8)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 30	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 10	
physCellId [1]	physicalCellIdentity-Cell10		
measResult [1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.13a.3.3-14: MeasurementReport (step 1, Table 8.3.1.13a.3.2-9)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 30	
physCellId [1]	physicalCellIdentity-Cell30		
measResult [1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			

Table 8.3.1.13a.3.3-15: TRACKING AREA UPDATE ACCEPT for Cell 30 (steps 13a4 and 13b2, Table 8.3.1.13a.3.2-2)

Derivation path: 36.508 Table 4.7.2-24			
Information Element	**Value/Remark**	**Comment**	**Condition**
Equivalent PLMNs	PLMN1		Cell 30

Table 8.3.1.13a.3.3-16: *RRCConnectionRelease* (step 13b1, Table 8.3.1.13a.3.2-2)

Derivation Path: 36.508 table 4.6.1-15			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRelease ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
rrcConnectionRelease-r8 SEQUENCE {			
redirectedCarrierInfo ::= CHOICE {			
Eutra	Downlink EARFCN of cell Cell 30		
}			
}			
}			
}			
}			

Table 8.3.1.13a.3.3-17: ATTACH ACCEPT for Cell 1 (preamble)

Derivation path: 36.508 Table 4.7.2-1			
Information Element	**Value/Remark**	**Comment**	**Condition**
Equivalent PLMNs	PLMN2		

8.3.1.14 Measurement configuration control and reporting / Intra E-UTRAN measurements / Two simultaneous events A2 and A3 (inter-band measurements)

8.3.1.14.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurements configured for event A2 and event A3 }
ensure that {
  when { Serving becomes worse than threshold }
   then { UE sends MeasurementReport for event A2 }
}
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and measurements configured for event A2 and event A3 }
ensure that {
  when { Neighbour becomes offset better than serving }
   then { UE sends MeasurementReport for event A3 }
}
```

8.3.1.14.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.4.1, 5.5.4.3, 5.5.4.4 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

...

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> if the *ue-RxTxTimeDiffPeriodical*, *eventA1* or *eventA2* is configured in the corresponding *reportConfig*:

5> consider only the serving cell to be applicable;

4> else:

5> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

…

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *purpose is* included and set to '*reportCGI*' and if the UE acquired the information needed to set all fields of *cgi-Info* for the requested cell:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> stop timer T321;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> upon expiry of the T321 for this *measId*:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

NOTE 3: If the UE is configured with DRX, the UE may delay the measurement reporting for event triggered and periodical triggered measurements until the Active Time, which is defined in TS 36.321 [6].

[TS 36.331, clause 5.5.4.3]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A2-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A2-2, as specified below, is fulfilled;

Inequality A2-1 (Entering condition)

$Ms + Hys < Thresh$

Inequality A2-2 (Leaving condition)

$Ms - Hys > Thresh$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any offsets.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Thresh is the threshold parameter for this event (i.e. *a2-Threshold* as defined within *reportConfigEUTRA* for this event).

Ms is expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Hys is expressed in dB.

Thresh is expressed in the same unit as ***Ms***.

[TS 36.331, clause 5.5.4.4]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A3-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A3-2, as specified below, is fulfilled;

Inequality A3-1 (Entering condition)

$$Mn + Ofn + Ocn - Hys > Ms + Ofs + Ocs + Off$$

Inequality A3-2 (Leaving condition)

$$Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off$$

The variables in the formula are defined as follows:

Mn is the measurement result of the neighbouring cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the neighbour cell (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell).

Ocn is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.

Ms is the measurement result of the serving cell, not taking into account any offsets.

Ofs is the frequency specific offset of the serving frequency (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the serving frequency).

Ocs is the cell specific offset of the serving cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the serving frequency), and is set to zero if not configured for the serving cell.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Off is the offset parameter for this event (i.e. *a3-Offset* as defined within *reportConfigEUTRA* for this event).

Mn, Ms are expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Ofn, Ocn, Ofs, Ocs, Hys, Off are expressed in dB.

[TS 36.331, clause 5.5.5]

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE 4: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of either decreasing quantity for UTRA and GERAN or increasing quantity for CDMA2000 *pilotStrength*, i.e. the best cell is included first;

…

…

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

…

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.1.14.3 Test description

8.3.1.14.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 10
- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.14.3.2 Test procedure sequence

Table 8.3.1.14.3.2-1 illustrates the downlink power levels to be applied for Cell 1 and Cell 10 at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while rows marked "T1"and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.14.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 10 (DL only)	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-75	-91	Power levels are such that entry condition for event A2 and event A3 is not satisfied: $Ms - Hys > Thresh$ AND $Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off$
T1	Cell-specific RS EPRE	dBm/15kHz	-93	-105	Power level of Cell 1 is such that entry condition for event A2 is satisfied: $Ms + Hys < Thresh$ AND Power levels of Cell 1 and Cell 10 are such that entry condition for event A3 is not satisfied: $Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off$
T2	Cell-specific RS EPRE	dBm/15kHz	-85	-73	Power levels are such that entry condition for event A3 is satisfied: $Mn + Ofn + Ocn - Hys > Ms + Ofs + Ocs + Off$

Table 8.3.1.14.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup intra LTE measurement and reporting for event A2 and event A3 (inter-band measurement)	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigrationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE transmit a *MeasurementReport* message within the next 10s?	-->	*MeasurementReport*	1	F
4	SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.14.3.2-1.	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message to report event A2 with the measured RSRP value for Cell 1?	-->	*MeasurementReport*	1	P
6	SS re-adjusts the cell-specific reference signal level according to row "T2" in table 8.3.1.14.3.2-1.	-	-	-	-
7	Check: Does the UE transmit a *MeasurementReport* message to report event A3 with the measured RSRP value for Cell 10?	-->	*MeasurementReport*	2	P

8.3.1.14.3.3 Specific message contents

Table 8.3.1.14.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.14.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.14.3.3-2: *MeasConfig* (step 1, Table 8.3.1.14.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1, condition INTER-FREQ			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f5		
measObject[2]	MeasObjectEUTRA-GENERIC(f5)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	2 entries		
reportConfigId[1]	IdReportConfig-A2		
reportConfig[1]	ReportConfig-A2		
reportConfigId[2]	IdReportConfig-A3		
reportConfig[2]	ReportConfig-A3		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A2		
measId[2]	2		
measObjectId[2]	IdMeasObject-f5		
reportConfigId[2]	IdReportConfig-A3		
}			
}			

Table 8.3.1.14.3.3-3: *ReportConfig-A2* (step 1, Table 8.3.1.14.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-5 ReportConfigEUTRA-A2(-83)			
Information Element	**Value/Remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
hysteresis	6	3 dB	
}			
}			
}			

Table 8.3.1.14.3.3-4: *ReportConfig-A3* (step 1, Table 8.3.1.14.3.2-2)

Derivation path: 36.508 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	
}			
}			
}			
}			
reportQuantity	sameAsTriggerQuantity		
}			

Table 8.3.1.14.3.3-5: *MeasurementReport* (step 5, Table 8.3.1.14.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

Table 8.3.1.14.3.3-6: *MeasurementReport* (step 7, Table 8.3.1.14.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 10	
physCellId	PhysCellId of the Cell 10.		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

8.3.1.14a Measurement configuration control and reporting / Intra E-UTRAN measurements / Two simultaneous events A2 and A3 (inter-band measurements) / Between FDD and TDD

8.3.1.14a.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA FDD RRC_CONNECTED state and measurements configured for event A2 and event A3 }
ensure that {
  when { Serving E-UTRA FDD cell becomes worse than threshold }
   then { UE sends MeasurementReport for event A2 }
}
```

(2)

```
with { UE in E-UTRA FDD RRC_CONNECTED state and measurements configured for event A2 and event A3 }
ensure that {
  when { Neighbour E-UTRA TDD cell becomes offset better than serving E-UTRA FDD cell }
   then { UE sends MeasurementReport for event A3 }
}
```

(3)

```
with { UE in E-UTRA TDD RRC_CONNECTED state and measurements configured for event A2 and event A3 }
ensure that {
  when { Serving E-UTRA TDD cell becomes worse than threshold }
   then { UE sends MeasurementReport for event A2 }
}
```

(4)

```
with { UE in E-UTRA TDD RRC_CONNECTED state and measurements configured for event A2 and event A3 }
ensure that {
  when { Neighbour E-UTRA FDD cell becomes offset better than serving E-UTRA TDD cell }
```

```
    then { UE sends MeasurementReport for event A3 }
}
```

8.3.1.14a.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.4.1, 5.5.4.3, 5.5.4.4 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

...

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> if the *ue-RxTxTimeDiffPeriodical*, *eventA1* or *eventA2* is configured in the corresponding *reportConfig*:

5> consider only the serving cell to be applicable;

4> else:

5> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

…

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *purpose is* included and set to '*reportCGI*' and if the UE acquired the information needed to set all fields of *cgi-Info* for the requested cell:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> stop timer T321;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> upon expiry of the T321 for this *measId*:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

NOTE 3: If the UE is configured with DRX, the UE may delay the measurement reporting for event triggered and periodical triggered measurements until the Active Time, which is defined in TS 36.321 [6].

[TS 36.331, clause 5.5.4.3]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A2-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A2-2, as specified below, is fulfilled;

Inequality A2-1 (Entering condition):

$$Ms + Hys < Thresh$$

Inequality A2-2 (Leaving condition):

$$Ms - Hys > Thresh$$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any offsets.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Thresh is the threshold parameter for this event (i.e. *a2-Threshold* as defined within *reportConfigEUTRA* for this event).

Ms is expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Hys is expressed in dB.

Thresh is expressed in the same unit as ***Ms***.

[TS 36.331, clause 5.5.4.4]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A3-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A3-2, as specified below, is fulfilled;

Inequality A3-1 (Entering condition):

$$Mn + Ofn + Ocn - Hys > Ms + Ofs + Ocs + Off$$

Inequality A3-2 (Leaving condition):

$$Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off$$

The variables in the formula are defined as follows:

Mn is the measurement result of the neighbouring cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the neighbour cell (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell).

Ocn is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.

Ms is the measurement result of the serving cell, not taking into account any offsets.

Ofs is the frequency specific offset of the serving frequency (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the serving frequency).

Ocs is the cell specific offset of the serving cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the serving frequency), and is set to zero if not configured for the serving cell.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Off is the offset parameter for this event (i.e. *a3-Offset* as defined within *reportConfigEUTRA* for this event).

Mn, Ms are expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Ofn, Ocn, Ofs, Ocs, Hys, Off are expressed in dB.

[TS 36.331, clause 5.5.5]

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of either decreasing quantity for UTRA and GERAN or increasing quantity for CDMA2000 *pilotStrength*, i.e. the best cell is included first;

…

…

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

…

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.1.14a.3 Test description

8.3.1.14a.3.1 Pre-test conditions

System Simulator:

- Cell 1 is E-UTRA FDD cell and Cell 28 is E-UTRA TDD cell.
- Each cell has only a single PLMN identity. The PLMNs are identified in the test by the identifiers in Table 8.3.1.14a.3.1-1.

Table 8.3.1.14a.3.1-1: PLMN identifiers

Cell	PLMN name
1	PLMN1
28	PLMN2

- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 and Table 6.3.1.2-2 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is registered on PLMN1 (Cell 1) using the procedure described in TS 36.508[18] clause 4.5.2.3 except that the ATTACH ACCEPT message indicates PLMN2 in the Equivalent PLMN list as described in Table 8.3.1.14a.3.3-15.
- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.14a.3.2 Test procedure sequence

Table 8.3.1.14a.3.2-1 illustrates the downlink power levels to be applied for Cell 1 and Cell 28 at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while rows marked "T1"and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.14a.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 28	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-75	-91	Power levels are such that entry condition for event A2 and event A3 is not satisfied: $Ms - Hys > Thresh$ AND $Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off$
T1	Cell-specific RS EPRE	dBm/15kHz	-93	-105	Power level of Cell 1 is such that entry condition for event A2 is satisfied: $Ms + Hys < Thresh$ AND Power levels of Cell 1 and Cell 28 are such that entry condition for event A3 is not satisfied: $Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off$
T2	Cell-specific RS EPRE	dBm/15kHz	-85	-73	Power levels are such that entry condition for event A3 is satisfied for Cell 1, and the entry condition for event A2 and event A3 are not satisfied for Cell 28 after the handover: $Mn + Ofn + Ocn - Hys > Ms + Ofs + Ocs + Off$
T3	Cell-specific RS EPRE	dBm/15kHz	-105	-93	Power level of Cell 28 is such that entry condition for event A2 is satisfied: $Ms + Hys < Thresh$ AND Power levels of Cell 1 and Cell 28 are such that entry condition for event A3 is not satisfied: $Mn + Ofn + Ocn + Hys < Ms + Ofs + Ocs + Off$
T4	Cell-specific RS EPRE	dBm/15kHz	-73	-85	Power levels are such that entry condition for event A3 is satisfied for Cell 28: $Mn + Ofn + Ocn - Hys > Ms + Ofs + Ocs + Off$

Table 8.3.1.14a.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup intra LTE measurement and reporting for event A2 and event A3 (inter-band measurement) on Cell 1	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE transmit a *MeasurementReport* message within the next 10s?	-->	*MeasurementReport*	1	F
4	SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.14a.3.2.-1.	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message to report event A2 with the measured RSRP value for Cell 1?	-->	*MeasurementReport*	1	P
6	SS re-adjusts the cell-specific reference signal level according to row "T2" in table 8.3.1.14a.3.2.-1.	-	-	-	-
7	Check: Does the UE transmit a *MeasurementReport* message to report event A3 with the measured RSRP value for Cell 28?	-->	*MeasurementReport*	2	P
-	EXCEPTION: Steps 8a1 to 8b5 describe behaviour that depends on the UE capability that if UE has set FGI bit 30 to 1; the "lower case letter" identifies a step sequence that takes place if a capability is supported.	-	-	-	-
8a1	IF pc_FeatrGrp_30 THEN the SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to order the UE to perform inter-band handover to Cell 28 and to activate the measurement gaps.	<--	*RRCConnectionReconfiguration*	-	-
8a2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 28 to confirm the successful handover	-->	*RRCConnectionReconfigurationComplete*	-	-
8a3	The UE transmits a TRACKING AREA UPDATE REQUEST message on Cell 28.	-	-	-	-
8a4	SS responds with a TRACKING AREA UPDATE ACCEPT message. NOTE: The TAU is accepted with PLMN1 listed as an Equivalent PLMN	-	-	-	-
8a5	The UE transmits a TRACKING AREA UPDATE COMPLETE message.	-	-	-	-
8b1	ELSE IF NOT pc_FeatrGrp_30 THEN the SS transmits an *RRCConnectionRelease* message (IE *redirectedCarrierInfo* including eutra CarrierFreq of Cell 28) on Cell 1	<--	*RRCConnectionRelease*	-	-
8b2	The generic test procedure described in TS 36.508 subclause 6.4.2.7 is performed on Cell 28 NOTE: The TAU is accepted with PLMN1 listed as an Equivalent PLMN				
8b3	Generic test procedure described in TS 36.508 subclause 4.5.3.3.is executed	-	-	-	-
8b4	The SS transmits an *RRCConnectionReconfiguration* message including *MeasConfig* to setup inter-band measurement and reporting for event A2 and event A3 on Cell 28.	<--	*RRCConnectionReconfiguration*	-	-
8b5	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-

9	Check: Does the UE transmit a *MeasurementReport* message within the next 10s?	-->	*MeasurementReport*	3	F
10	SS re-adjusts the cell-specific reference signal level according to row "T3" in table 8.3.1.14a.3.2.-1.	-	-	-	-
11	Check: Does the UE transmit a *MeasurementReport* message to report event A2 with the measured RSRP value for Cell 28?	-->	*MeasurementReport*	3	P
12	SS re-adjusts the cell-specific reference signal level according to row "T4" in table 8.3.1.14a.3.2.-1.	-	-	-	-
13	Check: Does the UE transmit a *MeasurementReport* message to report event A3 with the measured RSRP value for Cell 1?	-->	*MeasurementReport*	4	P

8.3.1.14a.3.3 Specific message contents

Table 8.3.1.14a.3.3-1: *RRCConnectionReconfiguration* (step 1 and step 8b4, Table 8.3.1.14a.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.14a.3.3-2: *MeasConfig* (step 1, Table 8.3.1.14a.3.3-1)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1, condition INTER-FREQ			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f6		
measObject[2]	MeasObjectEUTRA-GENERIC(f6)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	2 entries		
reportConfigId[1]	IdReportConfig-A2		
reportConfig[1]	ReportConfig-A2		
reportConfigId[2]	IdReportConfig-A3		
reportConfig[2]	ReportConfig-A3		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A2		
measId[2]	2		
measObjectId[2]	IdMeasObject-f6		
reportConfigId[2]	IdReportConfig-A3		
}			
}			

Table 8.3.1.14a.3.3-3: *ReportConfig-A2* (step 1 and step 8b4, Table 8.3.1.14a.3.3-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-5 ReportConfigEUTRA-A2(-83)			
Information Element	**Value/Remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
hysteresis	6	3 dB	
}			
}			
}			

Table 8.3.1.14a.3.3-4: *ReportConfig-A3* (step 1 and step 8b4, Table 8.3.1.14a.3.3-2)

Derivation path: 36.508 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	
}			
}			
}			
}			
reportQuantity	sameAsTriggerQuantity		
}			

Table 8.3.1.14a.3.3-5: *MeasurementReport* (step 5, Table 8.3.1.14a.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			

Table 8.3.1.14a.3.3-6: *MeasurementReport* (step 7, Table 8.3.1.14a.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 28	
physCellId	PhysCellId of the Cell 28		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.14a.3.3-7: *RRCConnectionReconfiguration* (step 8a1, Table 8.3.1.14a.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with conditions MEAS and HO

Table 8.3.1.14a.3.3-8: *MeasConfig* (step 8a1, Table 8.3.1.14a.3.3-7)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1, condition INTER-FREQ

Table 8.3.1.14a.3.3-9: *MobilityControlInfo* (step 8a1, Table 8.3.1.14a.3.3-7)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 28		
carrierFreq SEQUENCE {			
dl-CarrierFreq	Same DL EARFCN as used for Cell 28		
ul-CarrierFreq	Not present		
}			
}			

Table 8.3.1.14a.3.3-10: *MeasurementReport* (step 11, Table 8.3.1.14a.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 28	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			

Table 8.3.1.14a.3.3-11: *MeasurementReport* (step 13, Table 8.3.1.14a.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell ::= SEQUENCE {		Report Cell 28	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 1	
physCellId	PhysCellId of the Cell 1		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.14a.3.3-12: TRACKING AREA UPDATE ACCEPT for Cell 28 (steps 8a4 and 8b2, Table 8.3.1.14a.3.2-2)

Derivation path: 36.508 Table 4.7.2-24			
Information Element	**Value/Remark**	**Comment**	**Condition**
Equivalent PLMNs	PLMN1		Cell 28

Table 8.3.1.14a.3.3-13: *RRCConnectionRelease* (step 8b1, Table 8.3.1.14a.3.2-2)

Derivation Path: 36.508 table 4.6.1-15			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRelease ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
rrcConnectionRelease-r8 SEQUENCE {			
redirectedCarrierInfo ::= CHOICE {			
eutra	Downlink EARFCN of cell Cell 28		
}			
}			
}			
}			
}			

Table 8.3.1.14a.3.3-14: *MeasConfig* (step 8b4, Table 8.3.1.14a.3.3-1)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1, condition INTER-FREQ			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f6		
measObject[2]	MeasObjectEUTRA-GENERIC(f6)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	2 entries		
reportConfigId[1]	IdReportConfig-A2		
reportConfig[1]	ReportConfig-A2		
reportConfigId[2]	IdReportConfig-A3		
reportConfig[2]	ReportConfig-A3		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f6		
reportConfigId[1]	IdReportConfig-A2		
measId[2]	2		
measObjectId[2]	IdMeasObject-f1		
reportConfigId[2]	IdReportConfig-A3		
}			
}			

8.3.1.15 Measurement configuration control and reporting / Intra E-UTRAN measurements / Inter-band handover / IE measurement configuration not present

8.3.1.15.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the intra-frequency and inter-band measurements }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo
indicating a different E-UTRA frequency band and not including a measConfig }
    then { UE performs inter-band handover, continues the intra-frequency measurement and continues
inter-band measurement after the activation of the measurement gaps }
            }
```

8.3.1.15.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.5.6.1.

[TS 36.331, clause 5.5.6.1]

E-UTRAN applies the handover procedure as follows:

- when performing the handover procedure, as specified in 5.3.5.4, ensure that a *measObjectId* corresponding to the handover target carrier frequency is configured as a result of the procedures described in this sub-clause and in 5.3.5.4;

...

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *triggerType* is set to '*periodical*':

3> remove this *measId* from the *measIdList* within *VarMeasConfig*:

1> if the procedure was triggered due to inter-frequency handover or successful re-establishment to an inter-frequency cell, update the *measId* values in the *measIdList* within *VarMeasConfig* as follows:

2> if a *measObjectId* value corresponding to the target carrier frequency exists in the *measObjectList* within *VarMeasConfig*:

3> for each *measId* value in the *measIdList*:

4> if the *measId* value is linked to the *measObjectId* value corresponding to the source carrier frequency:

5> link this *measId* value to the *measObjectId* value corresponding to the target carrier frequency;

4> else if the *measId* value is linked to the *measObjectId* value corresponding to the target carrier frequency:

5> link this *measId* value to the *measObjectId* value corresponding to the source carrier frequency;

2> else:

3> remove all *measId* values that are linked to the *measObjectId* value corresponding to the source carrier frequency;

1> remove all measurement reporting entries within *VarMeasReportList*;

1> stop the periodical reporting timer or timer T321, whichever one is running, as well as associated information (e.g. *timeToTrigger*) for all *measId*;

1> release the measurement gaps, if activated;

NOTE: If the UE requires measurement gaps to perform inter-frequency or inter-RAT measurements, the UE resumes the inter-frequency and inter-RAT measurements after the E-UTRAN has setup the measurement gaps.

8.3.1.15.3 Test description

8.3.1.15.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 2, Cell 10 and Cell 30
- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.15.3.2 Test procedure sequence

Table 8.3.1.15.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1", "T2","T3", and "T4" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.15.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 2 (DL only)	Cell 10	Cell 30 (DL only)	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-85	-91	-97	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) do not satisfy entry condition for event A3 (M2 < M1). (NOTE 1).
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	-79	-97	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M2 > M1). (NOTE 1).
T2	Cell-specific RS EPRE	dBm/15 kHz	-85	"Off"	-73	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 10 (M10) satisfy entry condition for event A3 (M10 > M1). (NOTE 1).
T3	Cell-specific RS EPRE	dBm/15 kHz	-97	"Off"	-85	-79	The power level values are such that measurement results for Cell 10 (M10) and Cell 30 (M30) satisfy entry condition for event A3 (M30 > M10). (NOTE 1).
T4	Cell-specific RS EPRE	dBm/15 kHz	-73	"Off"	-85	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 10 (M10) satisfy entry condition for event A3 (M1 > M10). (NOTE 1).
NOTE 1: Power level “Off” is defined in TS36.508 Table 6.2.2.1-1.							

Table 8.3.1.15.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup intra-frequency and inter-band measurements on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the setup of intra-frequency and inter-band measurements on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes the cell-specific reference signal levels of Cell 2 according to the row "T1" in table 8.3.1.15.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to perform event A3 intra-frequency reporting for Cell 2 during the next 30 s.	-->	*MeasurementReport*	-	-
5	The SS changes the cell-specific reference signal levels of Cell 10 and switches "Off" Cell 2 according to row "T2" in table 8.3.1.15.3.2-1.	-	-	-	-
6	The UE transmits a *MeasurementReport* message on Cell 1 to perform event A3 inter-band reporting for Cell 10 during the next 30 s.	-->	*MeasurementReport*	-	-
7	The SS transmits an *RRCConnectionReconfiguration* message without a *measConfig*, to order the UE to perform inter-band handover to Cell 10.	<--	*RRCConnectionReconfiguration*	-	-
8	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message to Cell 10?	-->	*RRCConnectionReconfigurationComplete*	1	P
9	The SS transmits an *RRCConnectionReconfiguration* message to activate the measurement gaps on Cell 10.	<--	*RRCConnectionReconfiguration*	-	-
10	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the activation of the measurement gaps on Cell 10.	-->	*RRCConnectionReconfigurationComplete*	-	-
11	The SS changes the cell-specific reference signal levels of Cell 1 and Cell 10 and switches "On" Cell 30 according to the row "T3" in table 8.3.1.15.3.2-1.	-	-	-	-
12	Check: Does the UE transmit a *MeasurementReport* message on Cell 10 to perform event A3 intra-frequency reporting for Cell 30 during the next 30 s?	-->	*MeasurementReport*	1	P
13	The SS changes the cell-specific reference signal levels of Cell 1 and switches Cell 30 off according to row "T4" in table 8.3.1.15.3.2-1.	-	-	-	-
14	Check: Does the UE transmit a *MeasurementReport* message on Cell 10 to perform event A3 inter-band reporting for Cell 1 during the next 30 s?	-->	*MeasurementReport*	1	P
15	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicate that the UE is in E-UTRA RRC_CONNECTED state on Cell 10?	-	-	1	-

8.3.1.15.3.3 Specific message contents

Table 8.3.1.15.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.15.3.2-2)

Derivation Path: 36.508 Table 4.6.1-8, condition MEAS

Table 8.3.1.15.3.3-2: *MeasConfig* (Table 8.3.1.15.3.3-1)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f5		
measObject[2]	MeasObjectEUTRA-GENERIC(f5)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfigEUTRA-A3		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3		
measId[2]	2		
measObjectId[2]	IdMeasObject-f5		
reportConfigId[2]	IdReportConfig-A3		
}			
}			

Table 8.3.1.15.3.3-3: *MeasurementReport* (step 4, Table 8.3.1.15.3.2-2)

Derivation Path: 36.508 Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 2		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
additionalSI-Info-r9	Not present		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

Table 8.3.1.15.3.3-4: *MeasurementReport* (step 6, Table 8.3.1.15.3.2-2)

Derivation Path: 36.508 Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 10		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
additionalSI-Info-r9	Not present		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

Table 8.3.1.15.3.3-5: *RRCConnectionReconfiguration* (step 7, Table 8.3.1.15.3.2-2)

Derivation Path: 36.508 Table 4.6.1-8, condition HO

Table 8.3.1.15.3.3-6: *MobilityControlInfo* (Table 8.3.1.15.3.3-5)

Derivation Path: 36.508 Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 10		
carrierFreq SEQUENCE {			
dl-CarrierFreq	Same downlink EARFCN as used for Cell 10		
ul-CarrierFreq	Not present		
}			
}			

Table 8.3.1.15.3.3-7: *RRCConnectionReconfiguration* (step 9, Table 8.3.1.15.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.1.15.3.3-8: *MeasConfig* (Table 8.3.1.15.3.3-7)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ

Table 8.3.1.15.3.3-9: *MeasurementReport* (step 12, Table 8.3.1.15.3.2-2)

Derivation Path: 36.508 Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 30		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
additionalSI-Info-r9	Not present		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

Table 8.3.1.15.3.3-10: *MeasurementReport* (step 14, Table 8.3.1.15.3.2-2)

Derivation Path: 36.508 Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 1		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
additionalSI-Info-r9	Not present		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

8.3.1.15a Measurement configuration control and reporting / Intra E-UTRAN measurements / Inter-band handover / IE measurement configuration not present / Between FDD and TDD

8.3.1.15a.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA FDD RRC_CONNECTED state and having completed the radio bearer establishment,
initial security activation procedure and performed the intra frequency and inter-band E-UTRA TDD
frequency measurements }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo
indicating a different E-UTRA TDD frequency in different band and not including a measConfig }
    then { UE performs inter-band handover, continues the intra frequency measurement and continues
inter-band measurement after the activation of the measurement gaps }
            }
```

(2)

```
with { UE in E-UTRA TDD RRC_CONNECTED state and having completed the radio bearer establishment,
initial security activation procedure and performed the intra frequency and inter-band E-UTRA FDD
frequency measurements }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo
indicating a different E-UTRA FDD frequency in different band and not including a measConfig }
    then { UE performs inter-band handover, continues the intra frequency measurement and continues
inter-band measurement after the activation of the measurement gaps }
            }
```

8.3.1.15a.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.5.6.1.

[TS 36.331, clause 5.5.6.1]

E-UTRAN applies the handover procedure as follows:

- when performing the handover procedure, as specified in 5.3.5.4, ensure that a *measObjectId* corresponding to the handover target carrier frequency is configured as a result of the procedures described in this subclause and in 5.3.5.4;

...

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *triggerType* is set to '*periodical*':

3> remove this *measId* from the *measIdList* within *VarMeasConfig*:

1> if the procedure was triggered due to inter-frequency handover or successful re-establishment to an inter-frequency cell, update the *measId* values in the *measIdList* within *VarMeasConfig* as follows:

2> if a *measObjectId* value corresponding to the target carrier frequency exists in the *measObjectList* within *VarMeasConfig*

3> for each *measId* value in the *measIdList*:

4> if the *measId* value is linked to the *measObjectId* value corresponding to the source carrier frequency:

5> link this *measId* value to the *measObjectId* value corresponding to the target carrier frequency;

4> else if the *measId* value is linked to the *measObjectId* value corresponding to the target carrier frequency:

5> link this *measId* value to the *measObjectId* value corresponding to the source carrier frequency;

2> else:

3> remove all *measId* values that are linked to the *measObjectId* value corresponding to the source carrier frequency;

1> remove all measurement reporting entries within *VarMeasReportList*;

1> reset the periodical reporting timer or timer T321, whichever one is running, as well as associated information (e.g. *timeToTrigger*) for all *measId*;

1> release the measurement gaps, if activated;

NOTE: If the UE requires measurement gaps to perform inter-frequency or inter-RAT measurements, the UE resumes the inter-frequency and inter-RAT measurements after the E-UTRAN has setup the measurement gaps.

8.3.1.15a.3 Test description

8.3.1.15a.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 2 are E-UTRA FDD cells, Cell 10 and Cell 30 are E-UTRA TDD cell

- Each cell has only a single PLMN identity. The PLMNs are identified in the test by the identifiers in Table 8.3.1.15a.3.1-1.

Table 8.3.1.15a.3.1-1: PLMN identifiers

Cell	PLMN name
1	PLMN1
2	PLMN1
10	PLMN1
30	PLMN2

s

- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 and Table 6.3.1.2-2 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is registered on PLMN1 (Cell 1) using the procedure described in TS 36.508[18] clause 4.5.2.3 except that the ATTACH ACCEPT message indicates PLMN2 in the Equivalent PLMN list as described in Table 8.3.1.15a.3.3-12.

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.15a.3.2 Test procedure sequence

Table 8.3.1.15a.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1", "T2","T3", and "T4" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.15a.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 2 (DL only)	Cell 10	Cell 30 (DL only)	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-85	-91	-97	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) do not satisfy entry condition for event A3 (M2 < M1). (NOTE 1).
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	-79	-97	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M2 > M1). (NOTE 1).
T2	Cell-specific RS EPRE	dBm/15 kHz	-85	"Off"	-73	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 10 (M10) satisfy entry condition for event A3 (M10 > M1). (NOTE 1).
T3	Cell-specific RS EPRE	dBm/15 kHz	-97	"Off"	-85	-79	The power level values are such that measurement results for Cell 10 (M10) and Cell 30 (M30) satisfy entry condition for event A3 (M30 > M10). (NOTE 1).
T4	Cell-specific RS EPRE	dBm/15 kHz	-73	"Off"	-85	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 10 (M10) satisfy entry condition for event A3 (M1 > M10). (NOTE 1).
T5	Cell-specific RS EPRE	dBm/15 kHz	-85	-79	-97	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M2 > M1). (NOTE 1).
T6	Cell-specific RS EPRE	dBm/15 kHz	-85	"Off"	-73	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 10 (M10) satisfy entry condition for event A3 (M10 > M1). (NOTE 1).
NOTE 1: Power level “Off” is defined in TS36.508 Table 6.2.2.1-1.							

Table 8.3.1.15a.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup intra frequency and inter-band measurements on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the setup of intra frequency and inter-band measurements on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes the cell-specific reference signal levels of Cell 2 according to the row "T1" in table 8.3.1.15a.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to perform event A3 intra frequency reporting for Cell 2 during the next 30 s.	-	*MeasurementReport*	-	-
5	The SS changes the cell-specific reference signal levels of Cell 10 and switches "Off" Cell 2 according to row "T2" in table 8.3.1.15a.3.2-1.	-	-	-	-
6	The UE transmits a *MeasurementReport* message on Cell 1 to perform event A3 inter-band reporting for Cell 10 during the next 30 s.	-->	*MeasurementReport*	-	-
7	The SS transmits an *RRCConnectionReconfiguration* message without a *measConfig*, to order the UE to perform inter-band handover to Cell 10.	<--	*RRCConnectionReconfiguration*	-	-
8	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message to Cell 10?	-->	*RRCConnectionReconfigurationComplete*	1	P
8A	The UE transmits a TRACKING AREA UPDATE REQUEST message on Cell 10.	-	-	-	-
8B	SS responds with a TRACKING AREA UPDATE ACCEPT message.	-	-	-	-
8C	The UE transmits a TRACKING AREA UPDATE COMPLETE message.	-	-	-	-
9	The SS transmits an *RRCConnectionReconfiguration* message to activate the measurement gaps on Cell 10.	<--	*RRCConnectionReconfiguration*	-	-
10	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the activation of the measurement gaps on Cell 10.	-->	*RRCConnectionReconfigurationComplete*	-	-
10A	Void	-	-	-	-
10B	Void	-	-	-	-
10C	Void	-	-	-	-
11	The SS changes the cell-specific reference signal levels of Cell 1 and Cell 10 and switches "On" Cell 30 according to the row "T3" in table 8.3.1.15a.3.2-1.	-	-	-	-
12	Check: Does the UE transmit a *MeasurementReport* message on Cell 10 to perform event A3 intra frequency reporting for Cell 30 during the next 30 s?	-->	*MeasurementReport*	1	P
13	The SS changes the cell-specific reference signal levels of Cell 1 and switches Cell 30 off according to row "T4" in table 8.3.1.15a.3.2-1.	-	-	-	-
14	Check: Does the UE transmit a *MeasurementReport* message on Cell 10 to perform event A3 inter-band reporting for Cell	-->	*MeasurementReport*	1	P

	1 during the next 30 s?				
15	The SS transmits an *RRCConnectionReconfiguration* message without a *measConfig*, to order the UE to perform inter-band handover to Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
16	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message to Cell 1?	-->	*RRCConnectionReconfigurationComplete*	2	P
16A	The UE transmits a TRACKING AREA UPDATE REQUEST message on Cell 1.	-	-	-	-
16B	SS responds with a TRACKING AREA UPDATE ACCEPT message.	-	-	-	-
16C	The UE transmits a TRACKING AREA UPDATE COMPLETE message.	-	-	-	-
17	The SS transmits an *RRCConnectionReconfiguration* message to activate the measurement gaps on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
18	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the activation of the measurement gaps on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
18A	Void	-	-	-	-
18B	Void	-	-	-	-
18C	Void	-	-	-	-
19	The SS changes the cell-specific reference signal levels of Cells according to the row "T5" in table 8.3.1.15a.3.2-1.	-	-	-	-
20	The UE transmits a *MeasurementReport* message on Cell 1 to perform event A3 intra frequency reporting for Cell 2 during the next 30 s.	-	*MeasurementReport*	2	P
21	The SS changes the cell-specific reference signal levels of Cells according to row "T6" in table 8.3.1.15a.3.2-1.	-	-	-	-
22	The UE transmits a *MeasurementReport* message on Cell 1 to perform event A3 inter-band reporting for Cell 10 during the next 30 s.	-->	*MeasurementReport*	2	P
23	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicate that the UE is in E-UTRA RRC_CONNECTED state on Cell 1?	-	-	2	-

8.3.1.15a.3.3 Specific message contents

Table 8.3.1.15a.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.15a.3.2-1)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.1.15a.3.3-2: *MeasConfig* (Table 8.3.1.15a.3.3-1)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f5		
measObject[2]	MeasObjectEUTRA-GENERIC(f5)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfigEUTRA-A3		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3		
measId[2]	2		
measObjectId[2]	IdMeasObject-f5		
reportConfigId[2]	IdReportConfig-A3		
}			
}			

Table 8.3.1.15a.3.3-3: *MeasurementReport* (step 4 and step 20, Table 8.3.1.15a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {		Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 2	Cell 2	
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.15a.3.3-4: *MeasurementReport* (step 6 and step 22, Table 8.3.1.15a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {		Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 10	Cell 10	
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.15a.3.3-5: *RRCConnectionReconfiguration* (step 7 and step 15, Table 8.3.1.15a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition HO

Table 8.3.1.15a.3.3-6: *MobilityControlInfo* (step 7, Table 8.3.1.15a.3.3-5)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 10		
carrierFreq SEQUENCE {			
dl-CarrierFreq	Same DL EARFCN as used for Cell 10		
ul-CarrierFreq	Not present		
}			
}			

Table 8.3.1.15a.3.3-7: *MobilityControlInfo* (step 15, Table 8.3.1.15a.3.3-5)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 1		
carrierFreq SEQUENCE {			
dl-CarrierFreq	Same DL EARFCN as used for Cell 1		
ul-CarrierFreq	Same UL EARFCN as used for Cell 1		
}			
}			

Table 8.3.1.15a.3.3-8: *RRCConnectionReconfiguration* (step 9 and step 17, Table 8.3.1.15a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.1.15a.3.3-9: *MeasConfig* (Table 8.3.1.15a.3.3-8)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ

Table 8.3.1.15a.3.3-10: *MeasurementReport* (step 12, Table 8.3.1.15a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {		Cell 10	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 30	Cell 30	
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.15a.3.3-11: *MeasurementReport* (step 14, Table 8.3.1.15a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {		Cell 10	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 1	Cell 1	
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.15a.3.3-12: ATTACH ACCEPT for Cell 1 (preamble)

Derivation path: 36.508 Table 4.7.2-1			
Information Element	**Value/Remark**	**Comment**	**Condition**
Equivalent PLMNs	PLMN2		

8.3.1.16 Measurement configuration control and reporting / Intra E-UTRAN measurements / Continuation of the measurements after RRC connection re-establishment / Inter-band

8.3.1.16.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter-band measurement and after receiving an RRCConnectionReconfiguration message
including a mobilityControlInfo indicating a different E-UTRA cell having attempted intra-frequency
handover }
ensure that {
  when { UE detects handover failure and the intra-frequency cell is selectable }
    then { UE performs RRC Connection Re-establishment and continues the inter-band measurement
after the activation of the measurement gaps }
          }
```

8.3.1.16.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.5.4, 5.3.5.6, 5.3.7.2 and 5.5.6.1.

[TS 36.331, clause 5.3.5.4]

If the *RRCConnectionReconfiguration* message includes the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

1> stop timer T310, if running;

1> start timer T304 with the timer value set to *t304*, as included in the *mobilityControlInfo*;

1> if the *carrierFreq* is included:

2> consider the target cell to be one on the frequency indicated by the *carrierFreq* with a physical cell identity indicated by the *targetPhysCellId*;

1> else:

2> consider the target cell to be one on the current frequency with a physical cell identity indicated by the *targetPhysCellId*;

1> start synchronising to the DL of the target cell;

NOTE 1: The UE should perform the handover as soon as possible following the reception of the RRC message triggering the handover, which could be before confirming successful reception (HARQ and ARQ) of this message.

1> reset MAC;

1> re-establish PDCP for all RBs that are established;

NOTE 2: The handling of the radio bearers after the successful completion of the PDCP re-establishment, e.g. the re-transmission of unacknowledged PDCP SDUs (as well as the associated status reporting), the handling of the SN and the HFN, is specified in TS 36.323 [8].

1> re-establish RLC for all RBs that are established;

1> apply the value of the *newUE-Identity* as the C-RNTI;

1> if the *RRCConnectionReconfiguration* message includes the *fullConfig*:

2> perform the radio configuration procedure as specified in section 5.3.5.8;

1> configure lower layers in accordance with the received *radioResourceConfigCommon*;

1> configure lower layers in accordance with any additional fields, not covered in the previous, if included in the received *mobilityControlInfo*;

1> if the *RRCConnectionReconfiguration* message includes the *radioResourceConfigDedicated*:

2> perform the radio resource configuration procedure as specified in 5.3.10;

...

1> perform the measurement related actions as specified in 5.5.6.1;

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

1> release *reportProximityConfig* and clear any associated proximity status reporting timer;

1> if the *RRCConnectionReconfiguration* message includes the *reportProximityConfig*:

2> perform the proximity indication in accordance with the received *reportProximityConfig*;

1> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission;

1> if MAC successfully completes the random access procedure:

2> stop timer T304;

2> apply the parts of the CQI reporting configuration, the scheduling request configuration and the sounding RS configuration that do not require the UE to know the SFN of the target cell, if any;

2> apply the parts of the measurement and the radio resource configuration that require the UE to know the SFN of the target cell (e.g. measurement gaps, periodic CQI reporting, scheduling request configuration, sounding RS configuration), if any, upon acquiring the SFN of the target cell;

NOTE 3: Whenever the UE shall setup or reconfigure a configuration in accordance with a field that is received it applies the new configuration, except for the cases addressed by the above statements.

2> the procedure ends;

[TS 36.331, clause 5.3.5.6]

The UE shall:

1> if T304 expires (handover failure):

NOTE: Following T304 expiry any dedicated preamble, if provided within the *rach-ConfigDedicated*, is not available for use by the UE anymore.

2> revert back to the configuration used in the source cell, excluding the configuration configured by the *physicalConfigDedicated*, the *mac-MainConfig* and the *sps-Config*;

2> initiate the connection re-establishment procedure as specified in 5.3.7, upon which the RRC connection reconfiguration procedure ends;

[TS 36.331, clause 5.3.7.2]

The UE shall only initiate the procedure when AS security has been activated. The UE initiates the procedure when one of the following conditions is met:

1> upon detecting radio link failure, in accordance with 5.3.11; or

1> upon handover failure, in accordance with 5.3.5.6; or

1> upon mobility from E-UTRA failure, in accordance with 5.4.3.5; or

1> upon integrity check failure indication from lower layers; or

1> upon an RRC connection reconfiguration failure, in accordance with 5.3.5.5;

Upon initiation of the procedure, the UE shall:

1> stop timer T310, if running;

1> start timer T311;

1> suspend all RBs except SRB0;

1> reset MAC;

1> apply the default physical channel configuration as specified in 9.2.4;

1> apply the default semi-persistent scheduling configuration as specified in 9.2.3;

1> apply the default MAC main configuration as specified in 9.2.2;

1> release *reportProximityConfig* and clear any associated proximity status reporting timer;

1> perform cell selection in accordance with the cell selection process as specified in TS 36.304 [4];

[TS 36.331, clause 5.5.6.1]

E-UTRAN applies the re-establishment procedure as follows:

- when performing the connection re-establishment procedure, as specified in 5.3.7, ensure that a *measObjectId* corresponding to the target carrier frequency is configured as a result of the procedure described in this sub-clause and the subsequent connection reconfiguration procedure immediately following the re-establishment procedure;

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *triggerType* is set to '*periodical*':

3> remove this *measId* from the *measIdList* within *VarMeasConfig*:

1> if the procedure was triggered due to inter-frequency handover or successful re-establishment to an inter-frequency cell, update the *measId* values in the *measIdList* within *VarMeasConfig* as follows:

2> if a *measObjectId* value corresponding to the target carrier frequency exists in the *measObjectList* within *VarMeasConfig*:

3> for each *measId* value in the *measIdList*:

4> if the *measId* value is linked to the *measObjectId* value corresponding to the source carrier frequency:

5> link this *measId* value to the *measObjectId* value corresponding to the target carrier frequency;

4> else if the *measId* value is linked to the *measObjectId* value corresponding to the target carrier frequency:

5> link this *measId* value to the *measObjectId* value corresponding to the source carrier frequency;

2> else:

3> remove all *measId* values that are linked to the *measObjectId* value corresponding to the source carrier frequency;

1> remove all measurement reporting entries within *VarMeasReportList*;

1> stop the periodical reporting timer or timer T321, whichever one is running, as well as associated information (e.g. *timeToTrigger*) for all *measId*;

1> release the measurement gaps, if activated;

NOTE: If the UE requires measurement gaps to perform inter-frequency or inter-RAT measurements, the UE resumes the inter-frequency and inter-RAT measurements after the E-UTRAN has setup the measurement gaps.

8.3.1.16.3 Test description

8.3.1.16.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 2 and Cell 10.
- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.16.3.2 Test procedure sequence

Table 8.3.1.16.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1", "T2", "T3", and "T4" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.16.3.2-1: Time instances of cell power levels

	Parameter	Unit	Cell 1	Cell 2	Cell 10 (DL only)	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-85	"Off"	"Off"	(NOTE 1)
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	"Off"	-73	The power level values are such that measurement results for Cell 1 (M1) and Cell 10 (M10) satisfy entry condition for event A3 (M10 > M1). (NOTE 1)
T2	Cell-specific RS EPRE	dBm/15 kHz	-85	-79	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M2 > M1). (NOTE 1)
T3	Cell-specific RS EPRE	dBm/15 kHz	"Off"	-79	"Off"	The power level values are such that SrxlevCell 1 < 0 and SrxlevCell 10 < 0 are satisfied. (NOTE 1)
T4	Cell-specific RS EPRE	dBm/15 kHz	"Off"	-85	-73	The power level values are such that measurement results for Cell 2 (M2) and Cell 10 (M10) satisfy entry condition for event A3 (M10 > M2). (NOTE 1)
NOTE 1: Power level “Off” is defined in TS 36.508 Table 6.2.2.1-1.						

Table 8.3.1.16.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup intra-frequency and inter-band measurements on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the setup of intra-frequency and inter-band measurements on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 10 power level according to the row "T1" in Table 8.3.1.16.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 for Cell 10.	-->	*MeasurementReport*	-	-
5	The SS changes Cell 2 and Cell 10 power levels according to the row "T2" in Table 8.3.1.16.3.2-1.	-	-	-	-
6	The UE transmits a *MeasurementReport* message on Cell 1 to perform event A3 intra-frequency reporting for Cell 2.	-->	*MeasurementReport*	-	-
7	The SS transmits an *RRCConnectionReconfiguration* message including a *mobilityControlInfo*, to order the UE to perform intra-frequency handover to Cell 2.	<--	*RRCConnectionReconfiguration*	-	-
-	EXCEPTION: In parallel to the events described in step 8 the steps specified in Table 8.3.1.16.3.2-3 should take place.	-	-	-	-
8	The SS changes Cell 1 power level according to the row "T3" in Table 8.3.1.16.3.2-1.	-	-	-	-
9	Check: Does the UE transmit an *RRCConnectionReestablishmentRequest* message on Cell 2?	-->	*RRCConnectionReestablishmentRequest*	1	P
10	The SS transmits an *RRCConnectionReestablishment* message to resume SRB1 operation and re-activate security on Cell 2.	<--	*RRCConnectionReestablishment*	-	-
11	The UE transmits an *RRCConnectionReestablishmentComplete* message on Cell 2.	-->	*RRCConnectionReestablishmentComplete*	-	-
12	The SS transmits an *RRCConnectionReconfiguration* message to resume existing radio bearer on Cell 2.	<--	*RRCConnectionReconfiguration*	-	-
13	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 2.	-->	*RRCConnectionReconfigurationComplete*	-	-
14	The SS transmits an *RRCConnectionReconfiguration* message to activate the measurement gaps on Cell 2.	<--	*RRCConnectionReconfiguration*	-	-
15	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the activation of the measurement gaps on Cell 2.	-->	*RRCConnectionReconfigurationComplete*	-	-
16	The SS changes Cell 2 and Cell 10 power levels according to the row "T4" in Table 8.3.1.16.3.2-1.	-	-	-	-
17	Check: Does the UE transmit a *MeasurementReport* message on Cell 2 to report event A3 for Cell 10?	-->	*MeasurementReport*	1	P
18	Check: Does the test result of CALL generic test procedure in 36.508 subclause 6.2.4.3 indicate that the UE is in E-UTRA RRC_CONNECTED state on Cell 2?	-	-	1	-

Table 8.3.1.16.3.2-3: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: The steps 1 and 2 below are repeated for the duration of T304.	-	-	-	-
1	The UE attempts to perform the intra-frequency handover using MAC Random Access Preamble on Cell 2.	-	-	-	-
2	The SS does not respond.	-	-	-	-

8.3.1.16.3.3 Specific message contents

Table 8.3.1.16.3.3-1: *SystemInformationBlockType2* for Cell 2 (preamble and all steps, Table 8.3.1.16.3.2-2)

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType2 ::= SEQUENCE {			
radioResourceConfigCommon SEQUENCE {			
rach-ConfigCommon SEQUENCE {			
ra-SupervisionInfo SEQUENCE {			
preambleTransMax	n50		
}			
}			
}			
lateNonCriticalExtension	Not present		
ssac-BarringForMMTEL-Voice-r9	Not present		
ssac-BarringForMMTEL-Video-r9	Not present		
}			

Table 8.3.1.16.3.3-2: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.16.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.1.16.3.3-3: *MeasConfig* (Table 8.3.1.16.3.3-2)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f5		
measObject[2]	MeasObjectEUTRA-GENERIC(f5)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfigEUTRA-A3		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3		
measId[2]	2		
measObjectId[2]	IdMeasObject-f5		
reportConfigId[2]	IdReportConfig-A3		
}			
}			

Table 8.3.1.16.3.3-4: *MeasurementReport* (step 4 and 17, Table 8.3.1.16.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId	PhysicalCellIdentity of Cell 10		
cgi-Info	Not present		
measResult SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
additionalSI-Info-r9	Not present		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

Table 8.3.1.16.3.3-5: *MeasurementReport* (step 6, Table 8.3.1.16.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId	PhysicalCellIdentity of Cell 2		
cgi-Info	Not present		
measResult SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
additionalSI-Info-r9	Not present		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

Table 8.3.1.16.3.3-6: *RRCConnectionReconfiguration* (step 7, Table 8.3.1.16.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition HO

Table 8.3.1.16.3.3-7: *MobilityControlInfo* (Table 8.3.1.16.3.3-6)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 2		
carrierFreq	Not present		
}			

Table 8.3.1.16.3.3-8: *RRCConnectionReestablishmentRequest* (step 9, Table 8.3.1.16.3.2-2)

Derivation Path: 36.508, Table 4.6.1-13			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReestablishmentRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionReestablishmentRequest-r8 SEQUENCE {			
ue-Identity SEQUENCE {			
c-RNTI	the value of the C-RNTI of the UE		
physCellId	PhysicalCellIdentity of Cell 1		
shortMAC-I	The same value as the 16 least significant bits of the XMAC-I value calculated by SS		
}			
reestablishmentCause	handoverFailure		
}			
}			
}			

Table 8.3.1.16.3.3-9: *RRCConnectionReestablishmentComplete* (step 11, Table 8.3.1.16.3.2-2)

Derivation Path: 36.508, Table 4.6.1-11			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReestablishmentComplete ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionReestablishmentComplete-r8 = SEQUENCE {			
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			

Table 8.3.1.16.3.3-10: *RRCConnectionReconfiguration* (step 12, Table 8.3.1.16.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
radioResourceConfigDedicated	RadioResourceConfigDedicated-HO		
}			
}			
}			
}			

Table 8.3.1.16.3.3-11: *RRCConnectionReconfiguration* (step 14, Table 8.3.1.16.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8 condition MEAS

Table 8.3.1.16.3.3-12: *MeasConfig* (Table 8.3.1.16.3.3-11)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ

8.3.1.16a Measurement configuration control and reporting / Intra E-UTRAN measurements / Continuation of the measurements after RRC connection re-establishment / Inter-band / Between FDD and TDD

8.3.1.16a.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA FDD RRC_CONNECTED state and having completed the radio bearer establishment,
initial security activation procedure and performed the intra frequency measurement and after
receiving an RRCConnectionReconfiguration message including a mobilityControlInfo indicating a
different E-UTRA TDD cell having attempted inter- mode handover }
ensure that {
  when { UE detects handover failure and the inter-band E-UTRA TDD cell is selectable }
then { UE performs RRC Connection Re-establishment, continues the intra frequency measurement }
}
```

(2)

```
with { UE in E-UTRA FDD RRC_CONNECTED state and having completed the radio bearer establishment,
initial security activation procedure and performed the inter-band measurement and after receiving
an RRCConnectionReconfiguration message including a mobilityControlInfo indicating a different E-
UTRA TDD cell having attempted inter- mode handover}
ensure that {
  when { UE detects handover failure and the inter-band E-UTRA TDD cell is selectable }
then {UE performs RRC Connection Re-establishment, continues the inter-band measurement after the
activation of the measurement gaps }
}
```

(3)

```
with { UE in E-UTRA TDD RRC_CONNECTED state and having completed the radio bearer establishment,
initial security activation procedure and performed the intra frequency measurement and after
receiving an RRCConnectionReconfiguration message including a mobilityControlInfo indicating a
different E-UTRA FDD cell having attempted inter- mode handover }
ensure that {
  when { UE detects handover failure and the inter-band E-UTRA FDD cell is selectable }
then { UE performs RRC Connection Re-establishment, continues the intra frequency measurement }
}
```

(4)

```
with { UE in E-UTRA TDD RRC_CONNECTED state and having completed the radio bearer establishment,
initial security activation procedure and performed the inter-band measurement and after receiving
an RRCConnectionReconfiguration message including a mobilityControlInfo indicating a different E-
UTRA FDD cell having attempted inter- mode handover}
ensure that {
  when { UE detects handover failure and the inter-band E-UTRA FDD cell is selectable }
then {UE performs RRC Connection Re-establishment, continues the inter-band measurement after the
activation of the measurement gaps }
}
```

8.3.1.16a.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.5.4, 5.3.5.6, 5.3.7.2 and 5.5.6.1.

[TS 36.331, clause 5.3.5.4]

If the *RRCConnectionReconfiguration* message includes the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

1> stop timer T310, if running;

1> start timer T304 with the timer value set to *t304*, as included in the *mobilityControlInfo*;

1> if the *carrierFreq* is included:

2> consider the target cell to be one on the frequency indicated by the *carrierFreq* with a physical cell identity indicated by the *targetPhysCellId*;

1> else:

2> consider the target cell to be one on the current frequency with a physical cell identity indicated by the *targetPhysCellId*;

1> start synchronising to the DL of the target cell;

NOTE 1: The UE should perform the handover as soon as possible following the reception of the RRC message triggering the handover, which could be before confirming successful reception (HARQ and ARQ) of this message.

1> reset MAC;

1> re-establish PDCP for all RBs that are established;

NOTE 2: The handling of the radio bearers after the successful completion of the PDCP re-establishment, e.g. the re-transmission of unacknowledged PDCP SDUs (as well as the associated status reporting), the handling of the SN and the HFN, is specified in TS 36.323 [8].

1> re-establish RLC for all RBs that are established;

1> apply the value of the *newUE-Identity* as the C-RNTI;

1> configure lower layers in accordance with the received *radioResourceConfigCommon*;

1> if the *RRCConnectionReconfiguration* message includes the *radioResourceConfigDedicated*:

2> perform the radio resource configuration procedure as specified in 5.3.10;

…

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

1> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission;

1> if MAC successfully completes the random access procedure:

2> stop timer T304;

2> apply the parts of the configuration that do not require the UE to know the SFN of the target cell;

2> apply the parts of the measurement and the radio resource configuration that require the UE to know the SFN of the target cell (e.g. measurement gaps, periodic CQI reporting, scheduling request configuration, sounding RS configuration), if any, upon acquiring the SFN of the target cell;

2> the procedure ends;

NOTE 3: The UE is not required to determine the SFN of the target cell by acquiring system information from that cell before performing RACH access in the target cell.

[TS 36.331, clause 5.3.5.6]

The UE shall:

1> if T304 expires (handover failure):

NOTE: Following T304 expiry any dedicated preamble, if provided within the *rach-ConfigDedicated*, is not available for use by the UE anymore.

2> revert back to the configuration used in the source cell, excluding the configuration configured by the *physicalConfigDedicated*, the *mac-MainConfig* and the *sps-Config*;

2> initiate the connection re-establishment procedure as specified in 5.3.7, upon which the RRC connection reconfiguration procedure ends;

[TS 36.331, clause 5.3.7.2]

The UE shall only initiate the procedure when AS security has been activated. The UE initiates the procedure when one of the following conditions is met:

1> upon detecting radio link failure, in accordance with 5.3.11; or

1> upon handover failure, in accordance with 5.3.5.6; or

1> upon mobility from E-UTRA failure, in accordance with 5.4.3.5; or

1> upon integrity check failure indication from lower layers; or

1> upon an RRC connection reconfiguration failure, in accordance with 5.3.5.5;

Upon initiation of the procedure, the UE shall:

1> stop timer T310, if running;

1> start timer T311;

1> suspend all RBs except SRB0;

1> reset MAC;

1> apply the default physical channel configuration as specified in 9.2.4;

1> apply the default semi-persistent scheduling configuration as specified in 9.2.3;

1> apply the default MAC main configuration as specified in 9.2.2;

1> perform cell selection in accordance with the cell selection process as specified in TS 36.304 [4];

[TS 36.331,clause 5.5.6.1]

E-UTRAN applies the re-establishment procedure as follows:

- when performing the connection re-establishment procedure, as specified in 5.3.7, ensure that a *measObjectId* corresponding to the target carrier frequency is configured as a result of the procedure described in this sub-clause and the subsequent connection reconfiguration procedure immediately following the re-establishment procedure;

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *triggerType* is set to '*periodical*':

3> remove this *measId* from the *measIdList* within *VarMeasConfig*:

1> if the procedure was triggered due to inter-frequency handover or successful re-establishment to an inter-frequency cell, update the *measId* values in the *measIdList* within *VarMeasConfig* as follows:

2> if a *measObjectId* value corresponding to the target carrier frequency exists in the *measObjectList* within *VarMeasConfig*:

3> for each *measId* value in the *measIdList*:

4> if the *measId* value is linked to the *measObjectId* value corresponding to the source carrier frequency:

5> link this *measId* value to the *measObjectId* value corresponding to the target carrier frequency;

4> else if the *measId* value is linked to the *measObjectId* value corresponding to the target carrier frequency:

5> link this *measId* value to the *measObjectId* value corresponding to the source carrier frequency;

2> else:

3> remove all *measId* values that are linked to the *measObjectId* value corresponding to the source carrier frequency;

1> remove all measurement reporting entries within *VarMeasReportList*;

1> reset the periodical reporting timer or timer T321, whichever one is running, as well as associated information (e.g. *timeToTrigger*) for all *measId*;

1> release the measurement gaps, if activated;

NOTE: If the UE requires measurement gaps to perform inter-frequency or inter-RAT measurements, the UE resumes the inter-frequency and inter-RAT measurements after the E-UTRAN has setup the measurement gaps.

8.3.1.16a.3 Test description

8.3.1.16a.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 2 are E-UTRA FDD cells, Cell 10 and Cell 30 are E-UTRA TDD cells.
- Each cell has only a single PLMN identity. The PLMNs are identified in the test by the identifiers in Table 8.3.1.16 a.3.1-1.

Table 8.3.1.16 a.3.1-1: PLMN identifiers

Cell	PLMN name
1	PLMN1
2	PLMN1
10	PLMN1
30	PLMN2

- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 and Table 6.3.1.2-2 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is registered on PLMN1 (Cell 1) using the procedure described in TS 36.508[18] clause 4.5.2.3 except that the ATTACH ACCEPT message indicates PLMN2 in the Equivalent PLMN list as described in Table 8.3.1.16a.3.3-19.
- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.16a.3.2 Test procedure sequence

Table 8.3.1.16a.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1", "T2","T3", "T4", "T5" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.16a.3.2-1: Time instances of cell power levels

	Parameter	Unit	Cell 1	Cell 2	Cell 10	Cell 30	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-85	”off”	”off”	“off”	
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	-79	“off”	“off”	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M2 - Hys > M1).
T2	Cell-specific RS EPRE	dBm/15 kHz	-85	“off”	-73	“off”	The power level values are such that measurement results for Cell 1 (M1) and Cell 10 (M10) satisfy entry condition for event A3 (M10 - Hys > M1).
T3	Cell-specific RS EPRE	dBm/15 kHz	”off”	“off”	-73	“off”	The power level values are assigned values to satisfy SrxlevCell 1 < 0 and SrxlevCell 2 < 0 such that selecting Cell 10 is guaranteed
T4	Cell-specific RS EPRE	dBm/15 kHz	“off”	“off”	-85	-79	The power level values are such that measurement results for Cell 10 (M10) and Cell 30 (M30) satisfy entry condition for event A3 (M30 - Hys > M10).
T5	Cell-specific RS EPRE	dBm/15 kHz	-73	“off”	-85	“off”	The power level values are such that measurement results for Cell 1 (M1) and Cell 10 (M10) satisfy entry condition for event A3 (M1 - Hys > M10).
T6	Cell-specific RS EPRE	dBm/15 kHz	-73	“off”	“off”	“off”	The power level values are assigned values to satisfy SrxlevCell 10 < 0 and SrxlevCell 2 < 0 such that selecting Cell 1 is guaranteed
T7	Cell-specific RS EPRE	dBm/15 kHz	-85	-79	“off”	“off”	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M2 - Hys > M1).
T8	Cell-specific RS EPRE	dBm/15 kHz	-85	“off”	-73	“off”	The power level values are such that measurement results for Cell 1 (M1) and Cell 10 (M10) satisfy entry condition for event A3 (M10 - Hys > M1).

Table 8.3.1.16a.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup intra frequency and inter-band measurements on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the setup of intra frequency and inter-band measurements on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 2 power levels according to the row "T1" in Table 8.3.1.16a.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to perform event A3 intra frequency reporting for Cell 2.	-->	*MeasurementReport*	-	-
5	The SS changes Cell 2 and Cell 10 power levels according to the row "T2" in Table 8.3.1.16a.3.2-1.	-	-	-	-
6	The UE transmits a *MeasurementReport* message on Cell 1 to perform event A3 inter-band reporting for Cell 10.	-->	*MeasurementReport*	-	-
7	The SS transmits an *RRCConnectionReconfiguration* message including a *mobilityControlInfo*, to order the UE to perform inter-band handover to Cell 10.	<--	*RRCConnectionReconfiguration*	-	-
-	EXCEPTION: In parallel to the events described in step 8 the steps specified in Table 8.3.1.16a.3.2-3 should take place.	-	-	-	-
8	The SS changes Cell 1 power levels according to the row "T3" in Table 8.3.1.16a.3.2-1.	-	-	-	-
9	Check: Does the UE transmit an *RRCConnectionReestablishmentRequest* message on Cell 10?	-->	*RRCConnectionReestablishmentRequest*	1,2	P
10	The SS transmits an *RRCConnectionReestablishment* message to resume SRB1 operation and re-activate security on Cell 10.	<--	*RRCConnectionReestablishment*	-	-
11	The UE transmits an *RRCConnectionReestablishmentComplete* message on Cell 10.	-->	*RRCConnectionReestablishmentComplete*	-	-
12	The SS transmits an *RRCConnectionReconfiguration* message to resume existing radio bearer on Cell 10.	<--	*RRCConnectionReconfiguration*	-	-
13	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 10.	-->	*RRCConnectionReconfigurationComplete*	-	-
13A	The UE transmits a TRACKING AREA UPDATE REQUEST message on Cell 10.	-	-	-	-
13B	SS responds with a TRACKING AREA UPDATE ACCEPT message.	-	-	-	-
13C	The UE transmits a TRACKING AREA UPDATE COMPLETE message.	-	-	-	-
14	The SS changes Cell 10 and Cell 30 power levels according to the row "T4" in Table 8.3.1.16a.3.2-1.	-	-	-	-
15	Check: Does the UE transmit a *MeasurementReport* message on Cell 10 to perform event A3 intra frequency reporting for Cell 30?	-->	*MeasurementReport*	1	P
16	The SS transmits an *RRCConnectionReconfiguration* message to activate the measurement gaps on Cell 10.	<--	*RRCConnectionReconfiguration*	-	-
17	The UE transmits an *RRCConnectionReconfigurationComplete*	-->	*RRCConnectionReconfigurationComplete*	-	-

	message to confirm the activation of the measurement gaps on Cell 10.				
18	The SS changes Cell 1 and Cell 30 power levels according to the row "T5" in Table 8.3.1.16a.3.2-1.	-	-	-	-
19	Check: Does the UE transmit a *MeasurementReport* message on Cell 10 to perform event A3 inter-band reporting for Cell 1?	-->	*MeasurementReport*	2	P
20	The SS transmits an *RRCConnectionReconfiguration* message including a *mobilityControlInfo*, to order the UE to perform inter-band handover to Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
-	EXCEPTION: In parallel to the events described in step 21 the steps specified in Table 8.3.1.16a.3.2-4 should take place.	-	-	-	-
21	The SS changes Cell 1 power levels according to the row "T6" in Table 8.3.1.16a.3.2-1.	-	-	-	-
22	Check: Does the UE transmit an *RRCConnectionReestablishmentRequest* message on Cell 1?	-->	*RRCConnectionReestablishmentRequest*	3,4	P
23	The SS transmits an *RRCConnectionReestablishment* message to resume SRB1 operation and re-activate security on Cell 1.	<--	*RRCConnectionReestablishment*	-	-
24	The UE transmits an *RRCConnectionReestablishmentComplete* message on Cell 1.	-->	*RRCConnectionReestablishmentComplete*	-	-
25	The SS transmits an *RRCConnectionReconfiguration* message to resume existing radio bearer on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
26	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
26A	The UE transmits a TRACKING AREA UPDATE REQUEST message on Cell 1.	-	-	-	-
26B	SS responds with a TRACKING AREA UPDATE ACCEPT message.	-	-	-	-
26C	The UE transmits a TRACKING AREA UPDATE COMPLETE message.	-	-	-	-
27	The SS changes Cell 1 and Cell 2 power levels according to the row "T7" in Table 8.3.1.16a.3.2-1.	-	-	-	-
28	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 to perform event A3 intra frequency reporting for Cell 2?	-->	*MeasurementReport*	3	P
29	The SS transmits an *RRCConnectionReconfiguration* message to activate the measurement gaps on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
30	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the activation of the measurement gaps on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
31	The SS changes Cell 2 and Cell 10 power levels according to the row "T8" in Table 8.3.1.16a.3.2-1.	-	-	-	-
32	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 to perform event A3 inter-band reporting for Cell 10?	-->	*MeasurementReport*	4	P
33	Check: Does the test result of CALL generic test procedure in 36.508 subclause 6.2.4.3 indicate that the UE is in E-UTRA RRC_CONNECTED state on Cell 1?	-	-	3,4	-

Table 8.3.1.16a.3.2-3: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: The steps 1 and 2 below are repeated for the duration of T304.	-	-	-	-
1	The UE attempts to perform the inter-band handover using MAC Random Access Preamble on Cell 10.	-	-	-	-
2	The SS does not respond.	-	-	-	-

Table 8.3.1.16a.3.2-4: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: The steps 1 and 2 below are repeated for the duration of T304.	-	-	-	-
1	The UE attempts to perform the inter-band handover using MAC Random Access Preamble on Cell 1.	-	-	-	-
2	The SS does not respond.	-	-	-	-

8.3.1.16.3.3 Specific message contents

Table 8.3.1.16a.3.3-1: *SystemInformationBlockType2* for Cell 1, Cell 2, Cell 10 and Cell 30 (preamble and all the steps in Table 8.3.1.16a.3.2-2)

Derivation Path: 36.508, Table 4.6.3-12			
Information Element	**Value/remark**	**Comment**	**Condition**
ra-SupervisionInfo SEQUENCE {			
preambleTransMax	n50		
}			

Table 8.3.1.16a.3.3-2: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.16a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.1.16a.3.3-3: *MeasConfig* (step 1, Table 8.3.1.16a.3.3-2)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f5		
measObject[2]	MeasObjectEUTRA-GENERIC(f5)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfigEUTRA-A3		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3		
measId[2]	2		
measObjectId[2]	IdMeasObject-f5		
reportConfigId[2]	IdReportConfig-A3		
}			
}			

Table 8.3.1.16a.3.3-4: *MeasurementReport* (step 4, Table 8.3.1.16a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {		Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 2		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.16a.3.3-5: *MeasurementReport* (step 6, Table 8.3.1.16a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {		Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 10		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.16a.3.3-6: *RRCConnectionReconfiguration* (step 7 and step 20, Table 8.3.1.16a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition HO

Table 8.3.1.16a.3.3-7: *MobilityControlInfo* (step 7, Table 8.3.1.16a.3.3-6)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 10		
carrierFreq SEQUENCE {			
dl-CarrierFreq	Same DL EARFCN as used for Cell 10		
ul-CarrierFreq	Not present		
}			
}			

Table 8.3.1.16a.3.3-8: *RRCConnectionReestablishmentRequest* (step 9, Table 8.3.1.16a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-13			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReestablishmentRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionReestablishmentRequest-r8 SEQUENCE {			
ue-Identity SEQUENCE {			
c-RNTI	the value of the C-RNTI of the UE		
physCellId	PhysicalCellIdentity of Cell 1		
shortMAC-I	The same value as the 16 least significant bits of the XMAC-I value calculated by SS.		
}			
reestablishmentCause	handoverFailure		
}			
}			
}			

Table 8.3.1.16a.3.3-9: *RRCConnectionReestablishment* (step 10 and step 23, Table 8.3.1.16a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-10			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReestablishment ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReestablishment-r8 SEQUENCE {			
nextHopChainingCount	0		
}			
}			
}			
}			

Table 8.3.1.16a.3.3-9A: *RRCConnectionReestablishmentComplete* (step 11 and step 24, Table 8.3.1.16a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-11			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReestablishmentComplete ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionReestablishmentComplete-r8 = SEQUENCE {			
nonCriticalExtension SEQUENCE {	Not present		
}			
}			
}			
}			

Table 8.3.1.16a.3.3-10: *RRCConnectionReconfiguration* (step 12 and step 25, Table 8.3.1.16a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
radioResourceConfigDedicated	RadioResourceConfigDedicated-HO		
}			
}			
}			
}			

Table 8.3.1.16a.3.3-11: *MeasurementReport* (step 15, Table 8.3.1.16a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {		Cell 10	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 30		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.16a.3.3-12: *RRCConnectionReconfiguration* (step 16 and step 29, Table 8.3.1.16a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8 condition MEAS

Table 8.3.1.16a.3.3-13: *MeasConfig* (step 16 and step 29, Table 8.3.1.16a.3.2-12)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ

Table 8.3.1.16a.3.3-14: *MeasurementReport* (step 18, Table 8.3.1.16a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {		Cell 10	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 1		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.16a.3.3-15: *MobilityControlInfo* (step 20, Table 8.3.1.16a.3.3-6)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 1		
carrierFreq SEQUENCE {			
dl-CarrierFreq	Same DL EARFCN as used for Cell 1		
ul-CarrierFreq	Same UL EARFCN as used for Cell 1		
}			
}			

Table 8.3.1.16a.3.3-16: *RRCConnectionReestablishmentRequest* (step 22, Table 8.3.1.16a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-13			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReestablishmentRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionReestablishmentRequest-r8 SEQUENCE {			
ue-Identity SEQUENCE {			
c-RNTI	the value of the C-RNTI of the UE		
physCellId	PhysicalCellIdentity of Cell 10		
shortMAC-I	The same value as the 16 least significant bits of the XMAC-I value calculated by SS.		
}			
reestablishmentCause	handoverFailure		
}			
}			
}			

Table 8.3.1.16a.3.3-17: *MeasurementReport* (step 28, Table 8.3.1.16a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {		Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 2		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.16a.3.3-18: *MeasurementReport* (step 32, Table 8.3.1.16a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {		Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 10		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.16a.3.3-19: ATTACH ACCEPT for Cell 1 (preamble)

Derivation path: 36.508 Table 4.7.2-1			
Information Element	**Value/Remark**	**Comment**	**Condition**
Equivalent PLMNs	PLMN2		

8.3.1.17 CA / Measurement configuration control and reporting / Intra E-UTRAN measurements / Event A6

8.3.1.17.1 CA / Measurement configuration control and reporting / Intra E-UTRAN measurements / Event A6 / Intra-band Contiguous CA

8.3.1.17.1.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurements configured for event A6 }
ensure that {
  when { Entry condition for event A6 is not met }
   then { UE does not send MeasurementReport }
}
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and measurements configured for event A6 }
ensure that {
  when { Intra-frequency neighbour becomes offset better than SCell }
   then { UE sends MeasurementReport with correct measId for event A6 }
```

(3)

```
with { UE in E-UTRA RRC_CONNECTED state and measurements configured for event A6 }
ensure that {
```

when { UE receives a *RRCConnectionReconfiguration* message containing *sCellToReleaseList* with a *sCellIndex* equal to one of the current UE SCell configuration }
then { UE remove *measId* associated with event A6 and stops sending *MeasurementReport* message }

8.3.1.17.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3 5.5.2.2a, 5.5.4.1, 5.5.4.6a and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> if the received *RRCConnectionReconfiguration* includes the *sCellToReleaseList*:

2> perform SCell release as specified in 5.3.10.3a;

1> if the received *RRCConnectionReconfiguration* includes the *sCellToAddModList*:

2> perform SCell addition or modification as specified in 5.3.10.3b;

…

1> If the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the Measurement configuration procedure as specified in 5.5.2;

1> perform the measurement identity autonomous removal as specified in 5.5.2.2a;

...

[TS 36.331, clause 5.5.2.2a]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the associated *reportConfig* concerns an event involving a serving cell while the concerned serving cell is not configured:

3> remove the *measId* from the *measIdList* within the *VarMeasConfig*;

3> remove the measurement reporting entry for this *measId* from the *VarMeasReportList*, if included;

3> stop the periodical reporting timer if running, and reset the associated information (e.g. *timeToTrigger*) for this *measId*;

NOTE 1: The above UE autonomous removal of *measId*'s applies only for measurement events A1, A2 and A6.

NOTE 2: When performed during re-establishment, the UE is only configured with a primary frequency (i.e. the SCell(s) are released, if configured).

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the corresponding *reportConfig* includes a purpose set to '*reportStrongestCellsForSON*':

3> consider any neighbouring cell detected on the associated frequency to be applicable;

2> else if the corresponding *reportConfig* includes a purpose set to '*reportCGI*':

3> consider any neighbouring cell detected on the associated frequency/ set of frequencies (GERAN) which has a physical cell identity matching the value of the *cellForWhichToReportCGI* included in the corresponding *measObject* within the *VarMeasConfig* to be applicable;

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> if the *ue-RxTxTimeDiffPeriodical* is configured in the corresponding *reportConfig*:

5> consider only the PCell to be applicable;

4> else if the *eventA1* or *eventA2* is configured in the corresponding *reportConfig*:

5> consider only the serving cell to be applicable;

4> else:

5>consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the blackCellsToAddModList defined within the VarMeasConfig for this measId;

5> for events involving a serving cell on one frequency and neighbours on another frequency, consider the serving cell on the other frequency as a neighbouring cell;

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

NOTE 0: The UE may also consider a neighbouring cell on the associated UTRA frequency to be applicable when the concerned cell is included in the *csg-allowedReportingCells* within the *VarMeasConfig* for this *measId*, if configured in the corresponding *measObjectUTRA* (i.e. the cell is included in the range of physical cell identities for which reporting is allowed).

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the *VarMeasConfig* for this *measId*;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *purpose is* included and set to '*reportCGI*' and if the UE acquired the information needed to set all fields of *cellGlobalId* for the requested cell:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> stop timer T321;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> upon expiry of the T321 for this *measId*:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

NOTE 3: If the UE is configured with DRX, the UE may delay the measurement reporting for event triggered and periodical triggered measurements until the Active Time, which is defined in TS 36.321 [6].

[TS 36.331, clause 5.5.4.6a]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A6-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A6-2, as specified below, is fulfilled;

1> for this measurement, consider the (secondary) cell that is configured on the frequency indicated in the associated *measObjectEUTRA* to be the serving cell;

NOTE: The neighbour(s) is on the same frequency as the SCell i.e. both are on the frequency indicated in the associated *measObject*.

Inequality A6-1 (Entering condition):

$$Mn + Ocn - Hys > Ms + Ocs + Off$$

Inequality A6-2 (Leaving condition):

$$Mn + Ocn + Hys < Ms + Ocs + Off$$

The variables in the formula are defined as follows:

Mn is the measurement result of the neighbouring cell, not taking into account any offsets.

Ocn is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.

Ms is the measurement result of the serving cell, not taking into account any offsets.

Ocs is the cell specific offset of the serving cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the serving frequency), and is set to zero if not configured for the serving cell.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Off is the offset parameter for this event (i.e. *a6-Offset* as defined within *reportConfigEUTRA* for this event).

Mn, Ms are expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Ocn, Ocs, Hys, Off are expressed in dB.

[TS 36.331, clause 5.5.5]

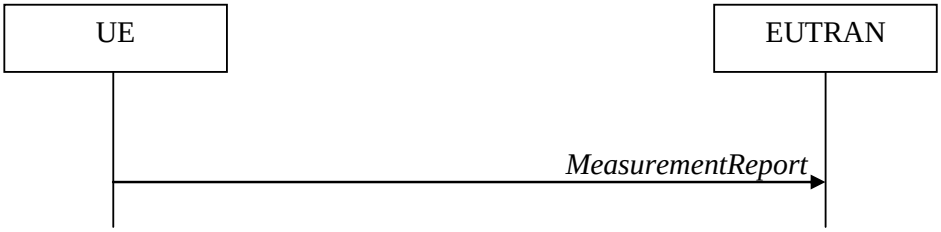

Figure 5.5.5-1: Measurement reporting

The purpose of this procedure is to transfer measurement results from the UE to E-UTRAN.

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultPCell* to include the quantities of the PCell;

1> set the *measResultServFreqList* to include for each SCell that is configured, if any, within *measResultSCell* the quantities of the concerned SCell;

1> if the *reportConfig* associated with the *measId* that triggered the measurement reporting includes *reportAddNeighMeas*:

2> for each serving frequency for which *measObjectId* is referenced in the *measIdList*, other than the frequency corresponding with the *measId* that triggered the measurement reporting:

3> set the *measResultServFreqList* to include within *measResultBestNeighCell* the *physCellId* and the quantities of the best non-serving cell, based on RSRP, on the concerned serving frequency;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> if the *measObject* associated with this *measId* concerns UTRA FDD and if *ReportConfigInterRAT* includes the *reportQuantityUTRA-FDD*:

6> set the *measResult* to include the quantities indicated by the *reportQuantityUTRA-FDD* in order of decreasing *measQuantityUTRA-FDD* within the *quantityConfig*, i.e. the best cell is included first;

5> if the *measObject* associated with this *measId* concerns UTRA FDD and if *ReportConfigInterRAT* does not include the *reportQuantityUTRA-FDD*; or

5> if the *measObject* associated with this *measId* concerns UTRA TDD, GERAN or CDMA2000:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of either decreasing quantity for UTRA and GERAN or increasing quantity for CDMA2000 *pilotStrength*, i.e. the best cell is included first;

3> else if the *purpose* is set to '*reportCGI*':

4> if the mandatory present fields of the *cgi-info* for the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* have been obtained:

5> if the cell broadcasts a CSG identity:

6> include the *csg-Identity*;

6> include the *csg-MemberStatus* and set it to *member* if the cell is a CSG member cell;

5> if the *si-RequestForHO* is configured within the *reportConfig* associated with this *measId*:

6> include the *cgi-Info* containing all the fields that have been successfully acquired, except for the *plmn-IdentityList*;

5> else:

6> include the *cgi-Info* containing all the fields that have been successfully acquired;

1> if the *ue-RxTxTimeDiffPeriodical* is configured within the corresponding *reportConfig* for this *measId*;

2> set the *ue-RxTxTimeDiffResult* to the measurement result provided by lower layers;

2> set the *currentSFN*;

1> if the *includeLocationInfo* is configured in the corresponding *reportConfig* for this *measId* and detailed location information that has not been reported is available, set the content of the *locationInfo* as follows:

2> include the *locationCoordinates*;

2> if available, include the *gnss-TOD-msec*;

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

1> else:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasReportList* for this *measId*;

3> remove this *measId* from the *measIdList* within *VarMeasConfig*;

1> if the measured results are for CDMA2000 HRPD:

2> set the *preRegistrationStatusHRPD* to the UE's CDMA2000 upper layer's HRPD *preRegistrationStatus*;

1> if the measured results are for CDMA2000 1xRTT:

2> set the *preRegistrationStatusHRPD* to '*FALSE*';

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.1.17.1.3 Test description

8.3.1.17.1.3.1 Pre-test conditions

System Simulator:

- Cell 1 is the PCell, Cell 3 is the SCell to be added, and Cell 12 is the intra-frequency neighbour cell of Cell 3
- Cell 3 is an Inactive SCell according to [18] cl. 6.3.4
- System information combination3 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.17.1.3.2 Test procedure sequence

Table 8.3.1.17.1.3.2-1 illustrates the downlink power levels to be applied for Cell 1, Cell 3 and Cell 12 at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while the configuration marked "T1" is applied at the point indicated in the Main behaviour description in Table 8.3.1.17.1.3.2-2.

Table 8.3.1.17.1.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 3	Cell 12	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-79	-85	-91	Power levels are such that entry condition for event A6 (measId 1) is not satisfied: $Mn + Ocn + Hys < Ms + Ocs + Off$
T1	Cell-specific RS EPRE	dBm/15kHz	-79	-85	-73	Power levels are such that entry condition for event A6 (measId 1) is satisfied: $Mn + Ocn - Hys > Ms + Ocs + Off$

Table 8.3.1.17.1.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message including *sCellToAddModList* with Cell 3 as SCell addition.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup intra E-UTRAN measurement and reporting for event A6.	<--	*RRCConnectionReconfiguration*	-	-
4	The UE transmits an *RRCConnectionReconfigrationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
5	Check: Does the UE transmit a *MeasurementReport* message within the next 10s?	-->	*MeasurementReport*	1	F
6	The SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.17.1.3.2-1.	-	-	-	-
7	Check: Does the UE transmit a *MeasurementReport* message to report event A6 with the measured RSRP and RSRQ value for Cell 12?	-->	*MeasurementReport*	2	P
8	The SS transmits an *RRCConnectionReconfiguration* message including *sCellToReleaseList* with Cell 3 as SCell release.	<--	*RRCConnectionReconfiguration*	-	-
9	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
10	Check: Does the UE attempt to transmit an uplink message for the next 10s?	-	-	3	F

8.3.1.17.1.3.3 Specific message contents

Table 8.3.1.17.1.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.17.1.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
rrcConnectionReconfiguration-r8 SEQUENCE {			
nonCriticalExtension SEQUENCE {			
nonCriticalExtension SEQUENCE {			
nonCriticalExtension SEQUENCE {			
sCellToReleaseList-r10	Not present		
sCellToAddModList-r10	SCellToAddMod-r10-f2	SCell addition for Cell 3	
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.1.17.1.3.3-2: SCellToAddMod-r10-f2 (Table 8.3.1.17.1.3.3-1)

Derivation Path: 36.508 clause 4.6.1 table 4.6.3-19D SCellToAddMod-r10-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
SCellToAddMod-r10 ::= SEQUENCE (SIZE (1..maxSCell-r10)) OF SEQUENCE {	1 entry		
sCellIndex-r10	1		
cellIdentification-r10 SEQUENCE {			
physCellId-r10	Physical Cell Identity of Cell 3		
dl-CarrierFreq-r10	Same downlink EARFCN as used for Cell 3		
}			
radioResourceConfigCommonSCell-r10	RadioResourceConfigCommonSCell-r10-f2		
}			

Table 8.3.1.17.1.3.3-3: *RadioResourceConfigCommonSCell-r10-f2* (Table 8.3.1.17.1.3.3-2)

Derivation Path: 36.508 clause 4.6.3 table 4.6.3-13A			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigCommonSCell-r10 ::= SEQUENCE {			
nonUL-Configuration-r10 SEQUENCE {			
dl-Bandwidth-r10	Same downlink system bandwidth as used for Cell 3		
}			
}			

Table 8.3.1.17.1.3.3-4: Void

Table 8.3.1.17.1.3.3-5: *RRCConnectionReconfiguration* (step 3, Table 8.3.1.17.1.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.17.1.3.3-6: *MeasConfig* (Table 8.3.1.17.1.3.3-5)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)	Cell 1	
measObjectId[2]	IdMeasObject-f2		
measObject[2]	MeasObjectEUTRA-GENERIC(f2)	Cell 3, 12	
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A6		
reportConfig[1]	ReportConfig-A6		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f2		
reportConfigId[1]	IdReportConfig-A6		
}			
}			

Table 8.3.1.17.1.3.3-7: *ReportConfig-A6* (Table 8.3.1.17.1.3.3-6)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-6A			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A6 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA6-r10 SEQUENCE {			
a6-Offset-r10	0 (0 dB)		
a6-ReportOnLeave-r10	FALSE		
}			
}			
hysteresis	0 (0 dB)		
timeToTrigger	ms640		
}			
}			
triggerQuantity	rsrp		
reportQuantity	both		
maxReportCells	1		
reportInterval	ms5120		
reportAmount	r2		
si-RequestForHO-r9	Not present		
ue-RxTxTimeDiffPeriodical-r9	Not present		
includeLocationInfo-r10	Not present		
reportAddNeighMeas-r10	Not present		
}			

Table 8.3.1.17.1.3.3-8: *MeasurementReport* (step 7, Table 8.3.1.17.1.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultPCell::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
MeasResultEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 12	
physCellId	physCellId of Cell 12.		
cgi-Info	Not present		
measResult SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
measResultForECID-r9	Not present		
locationInfo-r10	Not present		
measResultServFreqList-r10 SEQUENCE (SIZE (1..maxServCell-r10)) OF SEQUENCE {			
servFreqId-r10	1		
measResultSCell-r10 SEQUENCE {		Cell 3	
rsrpResultSCell-r10	(0..97)		
rsrqResultSCell-r10	(0..34)		
}			
}			
}			
}			
}			

Table 8.3.1.17.1.3.3-9: *RRCConnectionReconfiguration* (step 8, Table 8.3.1.17.1.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
rrcConnectionReconfiguration-r8 SEQUENCE {			
nonCriticalExtension SEQUENCE {			
nonCriticalExtension SEQUENCE {			
nonCriticalExtension SEQUENCE {			
sCellToReleaseList-r10 SEQUENCE (SIZE (1..maxSCell-r10) OF SEQUENCE {	1 entry		
sCellIndex-r10[1]	1	SCell release for Cell 3	
}			
sCellToAddModList-r10	Not present		
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			
}			
}			
}			
}			

8.3.1.17.2 CA / Measurement configuration control and reporting / Intra E-UTRAN measurements / Event A6 / Inter-band CA

8.3.1.17.2.1 Test Purpose (TP)

Same as TC 8.3.1.17.1 but applied to Inter-band CA case.

8.3.1.17.2.2 Conformance requirements

Same as TC 8.3.1.17.1 but applied to Inter-band CA case.

8.3.1.17.2.3 Test description

8.3.1.17.2.3.1 Pre-test conditions

Same as test case 8.3.1.17.1 with the following differences:

- CA configuration: Inter-band CA replaces Intra-band Contiguous CA
- Cells configuration: Cell 10 replaces Cell 3, Cell 30 replaces Cell 12
- Cell 10 is an Inactive SCell according to [18] cl. 6.3.4

8.3.1.17.2.3.2 Test procedure sequence

Same as test case 8.3.1.17.1 with the following differences:

- CA configuration: Inter-band CA replaces Inter-band Contiguous CA
- Cells configuration: Cell 10 replaces Cell 3, Cell 30 replaces Cell 12.

8.3.1.17.2.3.3 Specific message contents

Table 8.3.1.17.2.3.3-1: *MeasConfig* (Table 8.3.1.17.1.3.3-5)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)	Cell 1	
measObjectId[2]	IdMeasObject-f5		
measObject[2]	MeasObjectEUTRA-GENERIC(f5)	Cell 10, Cell 30	
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A6		
reportConfig[1]	ReportConfig-A6		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f5		
reportConfigId[1]	IdReportConfig-A6		
}			
}			

8.3.1.18 CA / Measurement configuration control and reporting / Intra E-UTRAN measurements / Additional measurement reporting

8.3.1.18.1 CA / Measurement configuration control and reporting / Intra E-UTRAN measurements / Additional measurement reporting / Intra-band Contiguous CA

8.3.1.18.1.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurements configured for event A2 reporting include
reportAddNeighMeas }
ensure that {
  when { Entry condition for event A2 of the concerned frequency that triggered measurement
reporting is met }
   then { UE sends MeasurementReport that does not include the best non-serving cell of the
concerned frequency in the measResultBestNeighCell }
}
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and measurements configured for event A2 reporting include
reportAddNeighMeas }
ensure that {
  when { Entry condition for event A2 of other than the concerned frequency that triggered
measurement reporting is met }
   then { UE sends MeasurementReport that includes the best non-serving cell of the concerned
frequency in the measResultBestNeighCell }
}
```

8.3.1.18.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.4.1 and 5.5.5. Unless otherwise stated these are Rel-10 requirements.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> if the received *RRCConnectionReconfiguration* includes the *sCellToAddModList*:

2> perform SCell addition or modification as specified in 5.3.10.3b;

…

1> If the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the Measurement configuration procedure as specified in 5.5.2;

...

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the corresponding *reportConfig* includes a purpose set to '*reportStrongestCellsForSON*':

3> consider any neighbouring cell detected on the associated frequency to be applicable;

2> else if the corresponding *reportConfig* includes a purpose set to '*reportCGI*':

3> consider any neighbouring cell detected on the associated frequency/ set of frequencies (GERAN) which has a physical cell identity matching the value of the *cellForWhichToReportCGI* included in the corresponding *measObject* within the *VarMeasConfig* to be applicable;

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> if the *ue-RxTxTimeDiffPeriodical* is configured in the corresponding *reportConfig*:

5> consider only the PCell to be applicable;

4> else if the *eventA1* or *eventA2* is configured in the corresponding *reportConfig*:

5> consider only the serving cell to be applicable;

4> else:

5>consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the blackCellsToAddModList defined within the VarMeasConfig for this measId;

5> for events involving a serving cell on one frequency and neighbours on another frequency, consider the serving cell on the other frequency as a neighbouring cell;

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

NOTE 0: The UE may also consider a neighbouring cell on the associated UTRA frequency to be applicable when the concerned cell is included in the *csg-allowedReportingCells* within the *VarMeasConfig* for this *measId*, if configured in the corresponding *measObjectUTRA* (i.e. the cell is included in the range of physical cell identities for which reporting is allowed).

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the *VarMeasConfig* for this *measId*;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *purpose is* included and set to '*reportCGI*' and if the UE acquired the information needed to set all fields of *cellGlobalId* for the requested cell:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> stop timer T321;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> upon expiry of the T321 for this *measId*:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

NOTE 3: If the UE is configured with DRX, the UE may delay the measurement reporting for event triggered and periodical triggered measurements until the Active Time, which is defined in TS 36.321 [6].

[TS 36.331, clause 5.5.5]

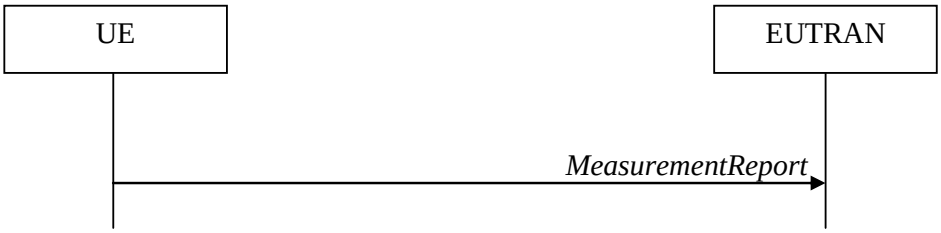

Figure 5.5.5-1: Measurement reporting

The purpose of this procedure is to transfer measurement results from the UE to E-UTRAN.

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultPCell* to include the quantities of the PCell;

1> set the *measResultServFreqList* to include for each SCell that is configured, if any, within *measResultSCell* the quantities of the concerned SCell;

1> if the *reportConfig* associated with the *measId* that triggered the measurement reporting includes *reportAddNeighMeas*:

2> for each serving frequency for which *measObjectId* is referenced in the *measIdList*, other than the frequency corresponding with the *measId* that triggered the measurement reporting:

3> set the *measResultServFreqList* to include within *measResultBestNeighCell* the *physCellId* and the quantities of the best non-serving cell, based on RSRP, on the concerned serving frequency;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> if the *measObject* associated with this *measId* concerns UTRA FDD and if *ReportConfigInterRAT* includes the *reportQuantityUTRA-FDD*:

6> set the *measResult* to include the quantities indicated by the *reportQuantityUTRA-FDD* in order of decreasing *measQuantityUTRA-FDD* within the *quantityConfig*, i.e. the best cell is included first;

5> if the *measObject* associated with this *measId* concerns UTRA FDD and if *ReportConfigInterRAT* does not include the *reportQuantityUTRA-FDD*; or

5> if the *measObject* associated with this *measId* concerns UTRA TDD, GERAN or CDMA2000:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of either decreasing quantity for UTRA and GERAN or increasing quantity for CDMA2000 *pilotStrength*, i.e. the best cell is included first;

3> else if the *purpose* is set to '*reportCGI*':

4> if the mandatory present fields of the *cgi-info* for the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* have been obtained:

5> if the cell broadcasts a CSG identity:

6> include the *csg-Identity*;

6> include the *csg-MemberStatus* and set it to *member* if the cell is a CSG member cell;

5> if the *si-RequestForHO* is configured within the *reportConfig* associated with this *measId*:

6> include the *cgi-Info* containing all the fields that have been successfully acquired, except for the *plmn-IdentityList*;

5> else:

6> include the *cgi-Info* containing all the fields that have been successfully acquired;

1> if the *ue-RxTxTimeDiffPeriodical* is configured within the corresponding *reportConfig* for this *measId*;

2> set the *ue-RxTxTimeDiffResult* to the measurement result provided by lower layers;

2> set the *currentSFN*;

1> if the *includeLocationInfo* is configured in the corresponding *reportConfig* for this *measId* and detailed location information that has not been reported is available, set the content of the *locationInfo* as follows:

2> include the *locationCoordinates*;

2> if available, include the *gnss-TOD-msec*;

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

1> else:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasReportList* for this *measId*;

3> remove this *measId* from the *measIdList* within *VarMeasConfig*;

1> if the measured results are for CDMA2000 HRPD:

2> set the *preRegistrationStatusHRPD* to the UE's CDMA2000 upper layer's HRPD *preRegistrationStatus*;

1> if the measured results are for CDMA2000 1xRTT:

2> set the *preRegistrationStatusHRPD* to '*FALSE*';

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.1.18.1.3 Test description

8.3.1.18.1.3.1 Pre-test conditions

System Simulator:

- Cell 1 is the PCell. Cell 3 is the SCell to be added, Cell 12 (broadcast only cell) and Cell 23 (broadcast only cell) is the intra-frequency neighbour cells of Cell 3.
- Cell 3 is an Inactive SCell according to [18] cl. 6.3.4.
- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.18.1.3.2 Test procedure sequence

Table 8.3.1.18.1.3.2-1 illustrates the downlink power levels to be applied for Cell 1, Cell 3, Cell 12 and Cell 23 at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while the configuration marked "T1" and "T2" are applied at the point indicated in the Main behaviour description in Table 8.3.1.18.1.3.2-2.

Table 8.3.1.18.1.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 3	Cell 12	Cell 23	Remark
T0	Cellspecific RS EPRE	dBm/15 kHz	-70	-70	-91	Off	Power levels are such that entry condition for event A2 is not satisfied *Ms + Hys > Thresh* for Cell 1 and Cell 3
T1	Cell-specific RS EPRE	dBm/15 kHz	-70	-96	-91	Off	Power levels are such that entry condition for event A2 in Cell 3 is satisfied: *Ms + Hys < Thresh*
T2	Cell-specific RS EPRE	dBm/15 kHz	-96	-70	-91	-97	Power levels are such that entry condition for event A2 in Cell 1 is satisfied: *Ms + Hys < Thresh*

Table 8.3.1.18.1.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message including *sCellToAddModList* with Cell 3 as SCell addition.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the SCell addition	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup intra E-UTRAN measurement and for event A2 reporting configuration and include *reportAddNeighMeas*	<--	*RRCConnectionReconfiguration*	-	-
4	The UE transmits an *RRCConnectionReconfigrationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
5	The SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.18.1.3.2-1.				
6	Check: Does the UE transmit a *MeasurementReport* message that does not include the RSRP and RSRQ value of the best non-serving cell on the concerned serving frequency in *measResultBestNeighCell*?	-->	*MeasurementReport*	1	P
7	The SS re-adjusts the cell-specific reference signal level according to row "T2" in table 8.3.1.18.1.3.2-1.	-	-	-	-
8	Check: Does the UE transmit a *MeasurementReport* message included the RSRP and RSRQ value of the best non-serving cell (Cell 12) on the concerned serving frequency in *measResultBestNeighCell*?	-->	*MeasurementReport*	2	P

8.3.1.18.1.3.3 Specific message contents

Table 8.3.1.18.1.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.18.1.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
rrcConnectionReconfiguration-r8 SEQUENCE {			
nonCriticalExtension SEQUENCE {			
nonCriticalExtension SEQUENCE {			
nonCriticalExtension SEQUENCE {			
sCellToReleaseList-r10	Not present		
sCellToAddModList-r10	SCellToAddMod-r10-f2	SCell addition for Cell 3	
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			
}			
}			
}			

Table 8.3.1.18.1.3.3-2: SCellToAddMod-r10-f2 (Table 8.3.1.18.1.3.3-1)

Derivation Path: 36.508 clause 4.6.1 table 4.6.3-19D SCellToAddMod-r10-DEFAULT			
Information Element	**Value/remark**	**Comment**	**Condition**
SCellToAddMod-r10 ::= SEQUENCE (SIZE (1..maxSCell-r10)) OF SEQUENCE {	1 entry		
sCellIndex-r10[1]	1		
cellIdentification-r10[1] SEQUENCE {			
physCellId-r10[1]	Physical Cell Identity of Cell 3		
dl-CarrierFreq-r10[1]	Same downlink EARFCN as used for Cell 3		
}			
radioResourceConfigCommonSCell-r10[1]	RadioResourceConfigCommonSCell-r10-f2		
radioResourceConfigDedicatedSCell-r10[1]	RadioResourceConfigDedicatedSCell-r10-DEFAULT		
…			
}			

Table 8.3.1.18.1.3.3-3: *RadioResourceConfigCommonSCell-r10-f2* (Table 8.3.1.18.1.3.3-2)

Derivation Path: 36.508 clause 4.6.3 table 4.6.3-13A			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigCommonSCell-r10 ::= SEQUENCE {			
nonUL-Configuration-r10 SEQUENCE {			
dl-Bandwidth-r10	Same downlink system bandwidth as used for Cell 3		
}			
}			

Table 8.3.1.18.1.3.3-4: Void

Table 8.3.1.18.1.3.3-5: *RRCConnectionReconfiguration* (step 3, Table 8.3.1.18.1.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.18.1.3.3-6: *MeasConfig* (Table 8.3.1.18.1.3.3-5)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)	Cell 1,	
measObjectId[2]	IdMeasObject-f2		
measObject[2]	MeasObjectEUTRA-GENERIC(f2)	Cell 3, Cell 12, Cell 23	
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A2		
reportConfig[1]	ReportConfig-A2-CA		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A2		
measId[2]	2		
measObjectId[2]	IdMeasObject-f2		
reportConfigId[2]	IdReportConfig-A2		
}			
}			

Table 8.3.1.18.1.3.3-7: *ReportConfig-A2-CA* (Table 8.3.1.18.1.3.3-6)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-5 ReportConfigEUTRA-A2(-83)			
Information Element	**Value/Remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
hysteresis	6	3 dB	
}			
}			
reportAddNeighMeas-r10	setup		
}			

Table 8.3.1.18.1.3.3-8: *MeasurementReport* (step 6, Table 8.3.1.18.1.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultPCell::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultForECID-r9	Not present		
locationInfo-r10	Not present		
measResultServFreqList-r10 SEQUENCE (SIZE (1..maxServCell-r10)) OF SEQUENCE {			
servFreqId-r10	1		
measResultSCell-r10 SEQUENCE {		Cell 3	
rsrpResultSCell-r10	(0..97)		
rsrqResultSCell-r10	(0..34)		
}			
}			
}			
}			
}			
}			

Table 8.3.1.18.1.3.3-9: *MeasurementReport* (step 8, Table 8.3.1.18.1.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultPCell::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultForECID-r9	Not present		
locationInfo-r10	Not present		
measResultServFreqList-r10 SEQUENCE (SIZE (1..maxServCell-r10)) OF SEQUENCE {	1 entry		
servFreqId-r10[1]	1		
measResultSCell-r10[1] SEQUENCE {		Cell 3	
rsrpResultSCell-r10	(0..97)		
rsrqResultSCell-r10	(0..34)		
}			
measResultBestNeighCell-r10[1] SEQUENCE {		Cell 12	
physCellId-r10	physCellId of Cell 12		
rsrpResultNCell-r10	(0..97)		
rsrqResultNCell-r10	(0..34)		
}			
}			
}			
}			
}			

8.3.1.18.2 CA / Measurement configuration control and reporting / Intra E-UTRAN measurements / Additional measurement reporting / Inter-band CA

8.3.1.18.2.1 Test Purpose (TP)

Same as TC 8.3.1.18.1 but applied to Inter-band CA case.

8.3.1.18.2.2 Conformance requirements

Same as TC 8.3.1.18.1 but applied to Inter-band CA case.

8.3.1.18.2.3 Test description

8.3.1.18.2.3.1 Pre-test conditions

Same as test case 8.3.1.18.1 with the following differences:

- CA configuration: Inter-band CA replaces Intra-band Contiguous CA.
- Cells configuration: Cell 10 replaces Cell 3, Cell 30 replaces Cell 12 and Cell 31 replaces Cell 23.
- Cell 10 is an Inactive SCell according to [18] cl. 6.3.4.

8.3.1.18.2.3.2 Test procedure sequence

Same as test case 8.3.1.18.1 with the following differences:

- CA configuration: Inter-band CA replaces Inter-band Contiguous CA
- Cells configuration: Cell 10 replaces Cell 3, Cell 30 replaces Cell 12 and Cell 31 replaces Cell 23.

8.3.1.18.2.3.3 Specific message contents

Same as test case 8.3.1.18.1 with the following differences.

NOTE: For simplicity the steps referred below are steps in test case 8.3.1.18.1.

Table 8.3.1.18.2.3.3-1: *MeasConfig* (Table 8.3.1.18.1.3.3-5)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)	Cell 1,	
measObjectId[2]	IdMeasObject-f5		
measObject[2]	MeasObjectEUTRA-GENERIC(f5)	Cell 10, Cell 30, Cell 31	
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A2		
reportConfig[1]	ReportConfig-A2-CA		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A2		
measId[2]	2		
measObjectId[2]	IdMeasObject-f5		
reportConfigId[2]	IdReportConfig-A2		
}			
}			

8.3.1.19 eICIC/ Measurement configuration control and reporting / CSI change

8.3.1.19.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and two csi-MeasSubframeSets configured }
ensure that {
  when { The periodic CQI/PMI reporting criteria is met }
   then { UE reports CQI as configured in cqi—pmi-ConfigIndexes }
}
```

8.3.1.19.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3 and 6.3.2; TS 36.213, clause 7.2.2.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> If the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the Measurement configuration procedure as specified in 5.5.2;

...

[TS 36.213, clause 7.2.2]

…

For each serving cell, the periodicity N_{pd} (in subframes) and offset $N_{OFFSET,CQI}$ (in subframes) for CQI/PMI reporting are determined based on the parameter *cqi-pmi-ConfigIndex* ($I_{CQI/PMI}$) given in Table 7.2.2-1A for FDD and Table 7.2.2-1C for TDD. The periodicity M_{RI} and relative offset $N_{OFFSET,RI}$ for RI reporting are determined based on the parameter *ri-ConfigIndex* (I_{RI}) given in Table 7.2.2-1B. Both *cqi-pmi-ConfigIndex* and *ri-ConfigIndex* are configured by higher layer signalling. The relative reporting offset for RI $N_{OFFSET,RI}$ takes values from the set $\{0,-1,\ldots,-(N_{pd}-1)\}$. If a UE is configured to report for more than one CSI subframe set then parameter *cqi-pmi-ConfigIndex* and *ri-ConfigIndex* respectively correspond to the CQI/PMI and RI periodicity and relative reporting offset for subframe set 1 and *cqi-pmi-ConfigIndex2* and *ri-ConfigIndex*2 respectively correspond to the CQI/PMI and RI periodicity and relative reporting offset for subframe set 2.

In the case where wideband CQI/PMI reporting is configured:

- The reporting instances for wideband CQI/PMI are subframes satisfying $(10 \times n_f + \lfloor n_s/2 \rfloor - N_{OFFSET,CQI}) \bmod (N_{pd}) = 0$.

- In case RI reporting is configured, the reporting interval of the RI reporting is an integer multiple M_{RI} of period N_{pd} (in subframes).

  -- The reporting instances for RI are subframes satisfying $(10 \times n_f + \lfloor n_s/2 \rfloor - N_{OFFSET,CQI} - N_{OFFSET,RI}) \bmod (N_{pd} \cdot M_{RI}) = 0$.

…

[TS 36.331, clause 6.3.2]

– CQI-ReportConfig

The IE *CQI-ReportConfig* is used to specify the CQI reporting configuration.

CQI-ReportConfig information elements

```
-- ASN1START

…

CQI-ReportConfig-r10 ::=    SEQUENCE {
    cqi-ReportAperiodic-r10             CQI-ReportAperiodic-r10         OPTIONAL,   -- Need ON
    nomPDSCH-RS-EPRE-Offset         INTEGER (-1..6),
    cqi-ReportPeriodic-r10              CQI-ReportPeriodic-r10          OPTIONAL,   -- Need ON
    pmi-RI-Report-r9                    ENUMERATED {setup}              OPTIONAL,   -- Cond
PMIRIPCell
    csi-SubframePatternConfig-r10       CHOICE {
        release                         NULL,
        setup                           SEQUENCE {
            csi-MeasSubframeSet1-r10            MeasSubframePattern-r10,
            csi-MeasSubframeSet2-r10            MeasSubframePattern-r10
        }
    }                                                                   OPTIONAL    -- Need ON
}

…

CQI-ReportPeriodic-r10 ::=      CHOICE {
    release                             NULL,
    setup                               SEQUENCE {
        cqi-PUCCH-ResourceIndex-r10         INTEGER (0..1184),
        cqi-PUCCH-ResourceIndexP1-r10       INTEGER (0..1184)               OPTIONAL,   -- Need OR
        cqi-pmi-ConfigIndex             INTEGER (0..1023),
        cqi-FormatIndicatorPeriodic-r10     CHOICE {
            widebandCQI-r10                     SEQUENCE {
                csi-ReportMode-r10      ENUMERATED {submode1, submode2}     OPTIONAL    -- Need OR
            },
            subbandCQI-r10                      SEQUENCE {
                k                               INTEGER (1..4),
                periodicityFactor-r10               ENUMERATED {n2, n4}
            }
        },
        ri-ConfigIndex                  INTEGER (0..1023)       OPTIONAL,               -- Need OR
        simultaneousAckNackAndCQI       BOOLEAN,
        cqi-Mask-r9                     ENUMERATED {setup}      OPTIONAL,               -- Need OR
        csi-ConfigIndex-r10             CHOICE {
            release                         NULL,
            setup                           SEQUENCE {
                cqi-pmi-ConfigIndex2-r10        INTEGER (0..1023),
                ri-ConfigIndex2-r10             INTEGER (0..1023)       OPTIONAL        -- Need OR
            }
        }       OPTIONAL                                                                -- Need ON
    }
}

CQI-ReportAperiodic-r10 ::=     CHOICE {
    release                             NULL,
    setup                               SEQUENCE {
        cqi-ReportModeAperiodic-r10         CQI-ReportModeAperiodic,
        aperiodicCSI-Trigger-r10            SEQUENCE {
            trigger1-r10                    BIT STRING (SIZE (8)),
            trigger2-r10                    BIT STRING (SIZE (8))
        }                                                                   OPTIONAL   -- Need OR
    }
}

CQI-ReportModeAperiodic ::=             ENUMERATED {
                                        rm12, rm20, rm22, rm30, rm31,
                                        spare3, spare2, spare1
}

-- ASN1STOP
```

***CQI-ReportConfig* field descriptions**
aperiodicCSI-Trigger indicates for which serving cell(s) the aperiodic CSI report is triggered when one or more SCells are configured. *trigger1* corresponds to the CSI request field 10 and *trigger2* corresponds to the CSI request field 11, see TS 36.213 [23, table 7.2.1-1A]. The leftmost bit, bit 0 in the bit string corresponds to the cell with *ServCellIndex*=0 and bit 1 in the bit string corresponds to the cell with *ServCellIndex*=1 etc. Each bit has either value 0 (means no aperiodic CSI report is triggered) or value 1 (means the aperiodic CSI report is triggered). At most 5 bits can be set to value 1 in the bit string. One value apples for all serving cells (the associated functionality is common i.e. not performed independently for each cell).
cqi-Mask Limits CQI/PMI/PTI/RI reports to the on-duration period of the DRX cycle, see TS 36.321 [6]. One value apples for all serving cells (the associated functionality is common i.e. not performed independently for each cell).
cqi-FormatIndicatorPeriodic Parameter: *PUCCH CQI Feedback Type,* see TS 36.213 [23, table 7.2.2-1]. Depending on transmissionMode, reporting mode is implicitly given from the table.
cqi-pmi-ConfigIndex Parameter: *CQI/PMI Periodicity and Offset Configuration Index* $I_{CQI/PMI}$, see TS 36.213 [23, tables 7.2.2-1A and 7.2.2-1C]. If subframe patterns for CSI (CQI/PMI/PTI/RI) reporting are configured (i.e. *csi-SubframePatternConfig* is configured), the parameter applies to the subframe pattern corresponding to *csi-MeasSubframeSet1.*
cqi-pmi-ConfigIndex2 Parameter: *CQI/PMI Periodicity and Offset Configuration Index* $I_{CQI/PMI}$, see TS 36.213 [23, tables 7.2.2-1A and 7.2.2-1C]. The parameter applies to the subframe pattern corresponding to *csi-MeasSubframeSet2.*
cqi-PUCCH-ResourceIndex, cqi-PUCCH-ResourceIndexP1 Parameter $n_{\mathrm{PUCCH}}^{(2,p)}$ for antenna port P0 and for antenna port P1 respectively, see TS 36.213 [23, 7.2]. E-UTRAN does not apply value 1185.
cqi-ReportModeAperiodic Parameter: *reporting mode.* Value rm12 corresponds to Mode 1-2, rm20 corresponds to Mode 2-0, rm22 corresponds to Mode 2-2 etc. PUSCH reporting modes are described in TS 36.213 [23, 7.2.1].
csi-ConfigIndex E-UTRAN configures *csi-ConfigIndex* only for PCell and only if *csi-SubframePatternConfig* is configured. The UE shall release *csi-ConfigIndex* if *csi-SubframePatternConfig* is released.
csi-ReportMode Parameter: *PUCCH_format1-1_CSI_reporting_mode,* see TS 36.213 [23, 7.2.2].
K Parameter: K, see TS 36.213 [23, 7.2.2].
nomPDSCH-RS-EPRE-Offset Parameter: Δ_{offset} *see* TS 36.213 [23, 7.2.3]. Actual value = IE value * 2 [dB].
periodicityFactor Parameter: H', see TS 36.213 [23, 7.2.2].
pmi-RI-Report See TS 36.213 [23, 7.2]. The presence of this field means PMI/RI reporting is configured; otherwise the PMI/RI reporting is not configured. EUTRAN configures this field only when *transmissionMode* is set to *tm8 or tm9*.
ri-ConfigIndex Parameter: *RI Config Index* I_{RI}, see TS 36.213 [23, 7.2.2-1B]. If subframe patterns for CSI (CQI/PMI/PTI/RI) reporting are configured (i.e. *csi-SubframePatternConfig* is configured), the parameter applies to the subframe pattern corresponding to *csi-MeasSubframeSet1.*
ri-ConfigIndex2 Parameter: *RI Config Index* I_{RI}, see TS 36.213 [23, 7.2.2-1B]. The parameter applies to the subframe pattern corresponding to *csi-MeasSubframeSet2.* E-UTRAN configures *ri-ConfigIndex2* only if *ri-ConfigIndex* is configured.
simultaneousAckNackAndCQI Parameter: *Simultaneous-AN-and-CQI.* see TS 36.213 [23, 10.1] TRUE indicates that simultaneous transmission of ACK/NACK and CQI is allowed. For SCells this field is not applicable and the UE shall ignore the value.

8.3.1.19.3 Test description

8.3.1.19.3.1 Pre-test conditions

System Simulator:

- Cell 1
- Cell 2 is the intra-frequency neighbour cell of Cell 1
- System information combination 1 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.19.3.2 Test procedure sequence

Table 8.3.1.19.3.2-1 illustrates the downlink power levels to be applied for Cell 1 and Cell 2 at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while row marked "T1" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.19.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 2	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-85	Off	
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	-79	

Table 8.3.1.19.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup CSI measurement patterns on Cell1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.19.3.2-1.	-	-	-	-
4	Wait for 1s to allow measurement restriction patterns to be configured and cell power levels to settle on correct level.				
5	CHECK: Does the UE perform periodical CQI reporting on subframes configured in CQI-ReportPeriodic-r10 (csi-MeasSubframeSet1 and csi-MeasSubframeSet2) during the next 5 s? (NOTE)	-->	(*CQI*)	1	P
6	Check: Does the test result of CALL generic procedure in TS 36.508 subclause 6.4.2.3 indicate that UE is in E-UTRA RRC_CONNECTED state?	-	-	1	-

Note: In this test case, wideband CQI/PMI reporting is configured for transmission mode tm3 and tm4,
For the csi-MeasSubframeSet1 the reporting instances for wideband CQI/PMI are subframes satisfying $(10 \times n_f + \lfloor n_s / 2 \rfloor - N_{OFFSET,CQI}) \bmod (N_{pd}) = 0$ The cqi-pmi-ConfigIndex($I_{CQI/PMI}$) = 25(FDD)/24(TDD), as per the Table 7.2.2-1A and 7.2.2-1C in TS 36.213, the periodicity N_p (in subframes) = 20ms(FDD) / 20ms(TDD), $N_{OFFSET,CQI}$ (in subframes) = 8ms(FDD) / 8ms(TDD),

For the csi-MeasSubframeSet2 the reporting instances for wideband CQI/PMI are subframes satisfying $(10 \times n_f + \lfloor n_s / 2 \rfloor - N_{OFFSET,CQI}) \bmod (N_{pd}) = 0$ The cqi-pmi-ConfigIndex($I_{CQI/PMI}$) = 40(FDD)/39(TDD), as per the Table 7.2.2-1A and 7.2.2-1C in TS 36.213, the periodicity N_p (in subframes) = 40ms(FDD) / 40ms(TDD), $N_{OFFSET,CQI}$ (in subframes) = 3ms (FDD) / 3 ms(TDD),

8.3.1.19.3.3 Specific message contents

Table 8.3.1.19.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.19.3.2-2)

Derivation Path: 36.331 clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
radioResourceConfigDedicated	RadioResourceConfigDedicated-CSIConfig		
}			
}			
}			
}			

Table 8.3.1.19.3.3-2: RadioResourceConfigDedicated-CSIConfig (Table 8.3.1.19.3.3-1)

Derivation Path: 36.331 clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated ::= SEQUENCE {			
srb-ToAddModList	Not present		
drb-ToAddModList	Not present		
drb-ToReleaseList	Not present		
mac-MainConfig	Not present		
sps-Config	Not present		
physicalConfigDedicated	PhysicalConfigDedicated-CSIConfig		
rlf-TimersAndConstants-r9	Not present		
measSubframePatternPCell-r10	Not present		
}			

Table 8.3.1.19.3.3-3: PhysicalConfigDedicated-CSIConfig (Table 8.3.1.19.3.3-2)

Derivation Path: 36.508, Table 4.8.2.1.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
PhysicalConfigDedicated ::= SEQUENCE {			
cqi-ReportConfig-r10	CQI-ReportConfig-r10-CSIConfig		SRB1
}			

Table 8.3.1.19.3.3-4: CQI-ReportConfig-r10-CSIConfig (Table 8.3.1.19.3.3-3)

Derivation Path: 36.508 clause 4.6.3			
Information Element	**Value/remark**	**Comment**	**Condition**
CQI-ReportConfig-r10 ::= SEQUENCE {			
cqi-ReportAperiodic-r10	Not present		
nomPDSCH-RS-EPRE-Offset	FFS		
cqi-ReportPeriodic-r10	CQI-ReportPeriodic-r10-RECONFIG		
pmi-RI-Report-r9	Not present		
csi-SubframePatternConfig-r10 CHOICE {			
setup SEQUENCE {			
csi-MeasSubframeSet1-r10			
subframePatternFDD-r10	'01000100010001000100010001000100010001000100'B		FDD
subframePatternTDD-r10 CHOICE {			TDD
subframeConfig1-5-r10	'01000100010000010001'B		
}			
csi-MeasSubframeSet2-r10			
subframePatternFDD-r10	'10111011101110111011101110111011101110111011'B		FDD
subframePatternTDD-r10 CHOICE {			TDD
subframeConfig1-5-r10	'10001010001100101000'B		
}			
}			
}			
}			

Table 8.3.1.19.3.3-5: CQI-ReportPeriodic-r10-RECONFIG Table (8.3.1.19.3.3-4)

Derivation Path: 36.331 clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
CQI-ReportPeriodic-r10 ::= CHOICE {			
setup SEQUENCE {			
cqi-PUCCH-ResourceIndex-r10	0		
cqi-PUCCH-ResourceIndexP1-r10	Not present		
cqi-pmi-ConfigIndex	25	(see Table 7.2.2-1A in TS 36.213)	FDD
	24	(see Table 7.2.2-1C in TS 36.213)	TDD
cqi-FormatIndicatorPeriodic-r10 CHOICE {			
widebandCQI-r10 SEQUENCE {			
csi-ReportMode-r10	submode1		
}			
}			
ri-ConfigIndex	Not present		
simultaneousAckNackAndCQI	FALSE		
cqi-Mask-r9	Not present		
csi-ConfigIndex-r10 CHOICE {			
setup SEQUENCE {			
cqi-pmi-ConfigIndex2-r10	40	(see Table 7.2.2-1A in TS 36.213)	FDD
	39	(see Table 7.2.2-1C in TS 36.213)	TDD
ri-ConfigIndex2-r10	Not present		
}			
}			
}			
}			

8.3.1.20 eICIC / Measurement configuration control and reporting / Event A3 / RSRP and RSRQ measurement / Neighbour ABS

8.3.1.20.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment and initial security activation procedure}
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a MeasObject provided with
all parameters including the neighbour cell measurement restriction pattern
measSubframePatternConfigNeigh}
    then { UE transmits an RRCConnectionReconfigurationComplete message }
           }
```

(2)

```
with { UE having transmitted an RRCConnectionReconfigurationComplete message in response to
RRCConnectionReconfiguration message including a MeasObject provided with all parameters including
the neighbour cell measurement restriction pattern measSubframePatternConfigNeigh}
ensure that {
  when { UE transmits MeasurementReport after A3 event}
    then { UE transmits RSRP and RSRQ measurements done in measSubframePatternNeigh }
           }
```

8.3.1.20.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.10.0, 5.3.10.8, 5.5.3.1 and 5.5.2.5.

[TS 36.331, clause 5.3.10.0]

The UE shall:

1> if the received *radioResourceConfigDedicated* includes the *srb-ToAddModList*:

2> perform the SRB addition or reconfiguration as specified in 5.3.10.1;

1> if the received *radioResourceConfigDedicated* includes the *drb-ToReleaseList*:

2> perform DRB release as specified in 5.3.10.2;

1> if the received *radioResourceConfigDedicated* includes the *drb-ToAddModList*:

2> perform DRB addition or reconfiguration as specified in 5.3.10.3;

1> if the received *radioResourceConfigDedicated* includes the *mac-MainConfig*:

2> perform MAC main reconfiguration as specified in 5.3.10.4;

1> if the received *radioResourceConfigDedicated* includes *sps-Config*:

2> perform SPS reconfiguration according to 5.3.10.5;

1> if the received *radioResourceConfigDedicated* includes the *physicalConfigDedicated*:

2> reconfigure the physical channel configuration as specified in 5.3.10. 6.

1> if the received *radioResourceConfigDedicated* includes the *rlf-TimersAndConstants*:

2> reconfigure the values of timers and constants as specified in 5.3.10.7;

1> if the received *radioResourceConfigDedicated* includes the *measSubframePatternPCell*:

2> reconfigure the time domain measurement resource restriction for the serving cell as specified in 5.3.10.8;

[TS 36.331, clause 5.3.10.8]

The UE shall:

1> if the received *measSubframePatternPCell* is set to *release*:

2> release the time domain measurement resource restriction for the PCell, if previously configured

1> else:

2> apply the time domain measurement resource restriction for the PCell in accordance with the received *measSubframePatternPCell;*

[TS 36.331, clause 5.5.3.1]

For all measurements the UE applies the layer 3 filtering as specified in 5.5.3.2, before using the measured results for evaluation of reporting criteria or for measurement reporting.

The UE shall:

1> whenever the UE has a *measConfig*, perform RSRP and RSRQ measurements for each serving cell, applying for the PCell the time domain measurement resource restriction in accordance with *measSubframePatternPCell*, if configured;

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *purpose* for the associated *reportConfig* is set to *reportCGI*:

3> if *si-RequestForHO* is configured for the associated *reportConfig*:

4> perform the corresponding measurements on the frequency and RAT indicated in the associated *measObject* using autonomous gaps as necessary;

3> else:

4> perform the corresponding measurements on the frequency and RAT indicated in the associated *measObject* using available idle periods or using autonomous gaps as necessary;

NOTE 1: If autonomous gaps are used to perform measurements, the UE is allowed to temporarily abort communication with all serving cell(s), i.e. create autonomous gaps to perform the corresponding measurements within the limits specified in TS 36.133 [16]. Otherwise, the UE only supports the measurements with the purpose set to *reportCGI* only if E-UTRAN has provided sufficient idle periods.

3> try to acquire the global cell identity of the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* by acquiring the relevant system information from the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is an E-UTRAN cell:

4> try to acquire the CSG identity, if the CSG identity is broadcast in the concerned cell;

4> try to acquire the *trackingAreaCode* in the concerned cell;

4> try to acquire the list of additional PLMN Identities, as included in the *plmn-IdentityList*, if multiple PLMN identities are broadcast in the concerned cell;

NOTE 2: The 'primary' PLMN is part of the global cell identity.

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a UTRAN cell:

4> try to acquire the LAC, the RAC and the list of additional PLMN Identities, if multiple PLMN identities are broadcast in the concerned cell;

4> try to acquire the CSG identity, if the CSG identity is broadcast in the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a GERAN cell:

4> try to acquire the RAC in the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a CDMA2000 cell and the *cdma2000-Type* included in the *measObject* is *typeHRPD*:

4> try to acquire the Sector ID in the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a CDMA2000 cell and the *cdma2000-Type* included in the *measObject* is *type1XRTT*:

4> try to acquire the BASE ID, SID and NID in the concerned cell;

2> else:

3> if a measurement gap configuration is setup; or

3> if the UE does not require measurement gaps to perform the concerned measurements:

4> if *s-Measure* is not configured; or

4> if *s-Measure* is configured and the PCell RSRP, after layer 3 filtering, is lower than this value:

5> perform the corresponding measurements of neighbouring cells on the frequencies and RATs indicated in the concerned *measObject*, applying for neighbouring cells on the primary frequency the time domain measurement resource restriction in accordance with *measSubframePatternConfigNeigh*, if configured in the concerned *measObject*;

4> if the *ue-RxTxTimeDiffPeriodical* is configured in the associated *reportConfig*:

5> perform the UE Rx–Tx time difference measurements on the PCell;

2> perform the evaluation of reporting criteria as specified in 5.5.4;

NOTE 3: The *s-Measure* defines when the UE is required to perform measurements. The UE is however allowed to perform measurements also when the PCell RSRP exceeds *s-Measure*, e.g., to measure cells broadcasting a CSG identity following use of the autonomous search function as defined in TS 36.304 [4].

[TS 36.331, clause 5.5.2.5]

The UE shall:

1> for each *measObjectId* included in the received *measObjectToAddModList*:

2> if an entry with the matching *measObjectId* exists in the *measObjectList* within the *VarMeasConfig*, for this entry:

3> replace the entry with the value received for this *measObject*, except for the fields *cellsToAddModList*, *blackCellsToAddModList*, *cellsToRemoveList*, *blackCellsToRemoveList* and *measSubframePatternConfigNeigh*;

3> if the received *measObject* includes the *cellsToRemoveList*:

4> for each *cellIndex* included in the *cellsToRemoveList*:

5> remove the entry with the matching *cellIndex* from the *cellsToAddModList*;

3> if the received *measObject* includes the *cellsToAddModList*:

4> for each *cellIndex* value included in the *cellsToAddModList*:

5> if an entry with the matching *cellIndex* exists in the *cellsToAddModList*:

6> replace the entry with the value received for this *cellIndex*;

5> else:

6> add a new entry for the received *cellIndex* to the *cellsToAddModList*;

3> if the received *measObject* includes the *blackCellsToRemoveList*:

4> for each *cellIndex* included in the *blackCellsToRemoveList*:

5> remove the entry with the matching *cellIndex* from the *blackCellsToAddModList*;

3> if the received *measObject* includes the *blackCellsToAddModList*:

4> for each *cellIndex* included in the *blackCellsToAddModList*:

5> if an entry with the matching *cellIndex* is included in the *blackCellsToAddModList*:

6> replace the entry with the value received for this *cellIndex*;

5> else:

6> add a new entry for the received *cellIndex* to the *blackCellsToAddModList*;

3> if the received *measObject* includes *measSubframePatternConfigNeigh*:

4> set *measSubframePatternConfigNeigh* within the *VarMeasConfig* to the value of the received field

3> for each *measId* associated with this *measObjectId* in the *measIdList* within the *VarMeasConfig*, if any:

4> remove the measurement reporting entry for this *measId* from the *VarMeasReportList*, if included;

4> stop the periodical reporting timer or timer T321, whichever one is running, and reset the associated information (e.g. *timeToTrigger*) for this *measId*;

2> else:

3> add a new entry for the received *measObject* to the *measObjectList* within *VarMeasConfig*;

8.3.1.20.3 Test description

8.3.1.20.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 2.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.20.3.2 Test procedure sequence

Table 8.3.1.20.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.20.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 2	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	-91	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy exit condition for event A3 (M2 < M1). Serving Cell has no ABS pattern.
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-79	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M2 > M1). Neighbour Cell has ABS Pattern (*measSubframePatternConfigNeigh*.

Table 8.3.1.20.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to setup intra frequency measurement.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1 to confirm the setup of intra frequency measurement.	-->	*RRCConnectionReconfigurationComplete*	1	P
3	The SS changes Cell 1 and Cell 2 parameters according to the row "T1" in table8.3.1.20.3.2-1.	-	-	-	-
4	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP and RSRQ values for Cell 2?	-->	*MeasurementReport*	2	P
5	Check: Does the UE transmit RSRP and RSRQ measurements in neighbour cell measurement restriction pattern?	-	FFS	-	-

8.3.1.20.3.3 Specific message contents

Table 8.3.1.20.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.20.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.20.3.3-2: Void

Table 8.3.1.20.3.3-3: *MeasConfig* (step 1, Table 8.3.1.20.3.3-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-1 with condition eICIC			
Information Element	**Value/remark**	**Comment**	**Condition**
measConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC		
}			
reportConfigToAddModList::= SEQUENCE {	ReportConfigToAddModList_DEFAULT		
}			
measIdToAddModList ::= SEQUENCE {	MeasIdToAddModList_DEFAULT		
}			
}			

Table 8.3.1.20.3.3-4: MeasObjectEUTRA-GENERIC (step 1, Table 8.3.1.20.3.3-2)

Derivation Path: 36.508, Table 4.6.6-2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA SEQUENCE {			
MeasSubframePatternConfigNeigh-r10 {			
measSubframePatternNeigh-r10			
subframePatternFDD-r10	'10110101101011010110101101011010110'B		FDD
subframePatternTDD-r10 CHOICE {			TDD
subframeConfig1-5-r10	'11001110011100111001'B		
}			
measSubframeCellList-r10 {}	1 entry	Cell 2	
}			
}			

8.3.1.21 eICIC / Measurement configuration control and reporting / Event A3 Handover / Neighbour RSRP measurement configuration change

8.3.1.21.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment and initial security activation procedure}
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a MeasObject provided with
all parameters including the neighbour cell measurement restriction pattern
measSubframePatternConfigNeigh}
    then { UE transmits an RRCConnectionReconfigurationComplete message }
          }
```

(2)

```
with { UE having transmitted an RRCConnectionReconfigurationComplete message in response to
RRCConnectionReconfiguration message including a MeasObject provided with all parameters including
the neighbour cell measurement restriction pattern measSubframePatternConfigNeigh}
ensure that {
  when { event A3 criteria is met}
    then { UE sends measurement report with event A3 }
          }
```

(3)

```
with { UE having sent measurement report with event A3 }
```

```
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo }
    then { UE transmits an RRCConnectionReconfigurationComplete message }
          }
```

8.3.1.21.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.10.0, 5.3.10.8, 5.5.3.1 and 5.5.2.5. Unless otherwise stated these are Rel-10 requirements.

[TS 36.331, clause 5.3.10.0]

The UE shall:

1> if the received radioResourceConfigDedicated includes the srb-ToAddModList:

2> perform the SRB addition or reconfiguration as specified in 5.3.10.1;

1> if the received radioResourceConfigDedicated includes the drb-ToReleaseList:

2> perform DRB release as specified in 5.3.10.2;

1> if the received radioResourceConfigDedicated includes the drb-ToAddModList:

2> perform DRB addition or reconfiguration as specified in 5.3.10.3;

1> if the received radioResourceConfigDedicated includes the mac-MainConfig:

2> perform MAC main reconfiguration as specified in 5.3.10.4;

1> if the received radioResourceConfigDedicated includes sps-Config:

2> perform SPS reconfiguration according to 5.3.10.5;

1> if the received radioResourceConfigDedicated includes the physicalConfigDedicated:

2> reconfigure the physical channel configuration as specified in 5.3.10. 6.

1> if the received radioResourceConfigDedicated includes the rlf-TimersAndConstants:

2> reconfigure the values of timers and constants as specified in 5.3.10.7;

1> if the received radioResourceConfigDedicated includes the measSubframePatternPCell:

2> reconfigure the time domain measurement resource restriction for the serving cell as specified in 5.3.10.8;

[TS 36.331, clause 5.3.10.8]

The UE shall:

1> if the received *measSubframePatternPCell* is set to *release*:

2> release the time domain measurement resource restriction for the PCell, if previously configured

1> else:

2> apply the time domain measurement resource restriction for the PCell in accordance with the received *measSubframePatternPCell;*

[TS 36.331, clause 5.5.2.5]

The UE shall:

1> for each *measObjectId* included in the received *measObjectToAddModList*:

2> if an entry with the matching *measObjectId* exists in the *measObjectList* within the *VarMeasConfig*, for this entry:

3> replace the entry with the value received for this measObject, except for the fields cellsToAddModList, blackCellsToAddModList, cellsToRemoveList, blackCellsToRemoveList and measSubframePatternConfigNeigh;

3> if the received measObject includes the cellsToRemoveList:

4> for each *cellIndex* included in the *cellsToRemoveList*:

5> remove the entry with the matching *cellIndex* from the *cellsToAddModList*;

3> if the received *measObject* includes the *cellsToAddModList*:

4> for each *cellIndex* value included in the *cellsToAddModList*:

5> if an entry with the matching *cellIndex* exists in the *cellsToAddModList*:

6> replace the entry with the value received for this *cellIndex*;

5> else:

6> add a new entry for the received *cellIndex* to the *cellsToAddModList*;

3> if the received *measObject* includes the *blackCellsToRemoveList*:

4> for each cellIndex included in the blackCellsToRemoveList:

5> remove the entry with the matching *cellIndex* from the *blackCellsToAddModList*;

3> if the received *measObject* includes the *blackCellsToAddModList*:

4> for each cellIndex included in the blackCellsToAddModList:

5> if an entry with the matching *cellIndex* is included in the *blackCellsToAddModList*:

6> replace the entry with the value received for this *cellIndex*;

5> else:

6> add a new entry for the received *cellIndex* to the *blackCellsToAddModList*;

3> if the received measObject includes measSubframePatternConfigNeigh:

4> set *measSubframePatternConfigNeigh* within the *VarMeasConfig* to the value of the received field

3> for each *measId* associated with this *measObjectId* in the *measIdList* within the *VarMeasConfig*, if any:

4> remove the measurement reporting entry for this *measId* from the *VarMeasReportList*, if included;

4> stop the periodical reporting timer or timer T321, whichever one is running, and reset the associated information (e.g. *timeToTrigger*) for this *measId*;

2> else:

3> add a new entry for the received *measObject* to the *measObjectList* within *VarMeasConfig*;

[TS 36.331, clause 5.5.3.1]

For all measurements the UE applies the layer 3 filtering as specified in 5.5.3.2, before using the measured results for evaluation of reporting criteria or for measurement reporting.

The UE shall:

1> whenever the UE has a *measConfig*, perform RSRP and RSRQ measurements for each serving cell, applying for the PCell the time domain measurement resource restriction in accordance with *measSubframePatternPCell*, if configured;

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *purpose* for the associated *reportConfig* is set to *reportCGI*:

3> if *si-RequestForHO* is configured for the associated *reportConfig*:

4> perform the corresponding measurements on the frequency and RAT indicated in the associated *measObject* using autonomous gaps as necessary;

3> else:

4> perform the corresponding measurements on the frequency and RAT indicated in the associated *measObject* using available idle periods or using autonomous gaps as necessary;

NOTE 1: If autonomous gaps are used to perform measurements, the UE is allowed to temporarily abort communication with all serving cell(s), i.e. create autonomous gaps to perform the corresponding measurements within the limits specified in TS 36.133 [16]. Otherwise, the UE only supports the measurements with the purpose set to *reportCGI* only if E-UTRAN has provided sufficient idle periods.

3> try to acquire the global cell identity of the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* by acquiring the relevant system information from the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is an E-UTRAN cell:

4> try to acquire the CSG identity, if the CSG identity is broadcast in the concerned cell;

4> try to acquire the *trackingAreaCode* in the concerned cell;

4> try to acquire the list of additional PLMN Identities, as included in the *plmn-IdentityList*, if multiple PLMN identities are broadcast in the concerned cell;

NOTE 2: The 'primary' PLMN is part of the global cell identity.

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a UTRAN cell:

4> try to acquire the LAC, the RAC and the list of additional PLMN Identities, if multiple PLMN identities are broadcast in the concerned cell;

4> try to acquire the CSG identity, if the CSG identity is broadcast in the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a GERAN cell:

4> try to acquire the RAC in the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a CDMA2000 cell and the *cdma2000-Type* included in the *measObject* is *typeHRPD*:

4> try to acquire the Sector ID in the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a CDMA2000 cell and the *cdma2000-Type* included in the *measObject* is *type1XRTT*:

4> try to acquire the BASE ID, SID and NID in the concerned cell;

2> else:

3> if a measurement gap configuration is setup; or

3> if the UE does not require measurement gaps to perform the concerned measurements:

4> if *s-Measure* is not configured; or

4> if *s-Measure* is configured and the PCell RSRP, after layer 3 filtering, is lower than this value:

5> perform the corresponding measurements of neighbouring cells on the frequencies and RATs indicated in the concerned *measObject*, applying for neighbouring cells on the primary frequency

the time domain measurement resource restriction in accordance with *measSubframePatternConfigNeigh*, if configured in the concerned *measObject*;

4> if the *ue-RxTxTimeDiffPeriodical* is configured in the associated *reportConfig*:

5> perform the UE Rx–Tx time difference measurements on the PCell;

2> perform the evaluation of reporting criteria as specified in 5.5.4;

NOTE 3: The *s-Measure* defines when the UE is required to perform measurements. The UE is however allowed to perform measurements also when the PCell RSRP exceeds *s-Measure*, e.g., to measure cells broadcasting a CSG identity following use of the autonomous search function as defined in TS 36.304 [4].

8.3.1.21.3 Test description

8.3.1.21.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 2, with Cell 2 being the intra-frequency neighbour cell of Cell 1.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.21.3.2 Test procedure sequence

Table 8.3.1.21.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.21.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 2	Remark
T0	Cell-specific RS EPRE	dBm/15k Hz	-85	-91	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy exit condition for event A3 (M2 < M1). Serving Cell has no ABS pattern.
T1	Cell-specific RS EPRE	dBm/15k Hz	-85	-79	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M2 > M1). Neighbour Cell has ABS Pattern *measSubframePatternConfigNeigh*.

Table 8.3.1.21.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to setup intra frequency measurement.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1 to confirm the setup of intra frequency measurement.	-->	*RRCConnectionReconfigurationComplete*	1	P
3	The SS changes Cell 1 and Cell 2 parameters according to the row "T1" in Table 8.3.1.21.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP values for Cell 2.	-->	*MeasurementReport*	2	P
5	The SS transmits an *RRCConnectionReconfiguration* message to order the UE to perform intra frequency handover to Cell 2.	<--	*RRCConnectionReconfiguration*	-	-
6	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 2 using common preamble to confirm the successful completion of the intra frequency handover?	-->	*RRCConnectionReconfigurationComplete*	3	P

8.3.1.21.3.3 Specific message contents

Table 8.3.1.21.3.3-1: RRCConnectionReconfiguration (step 1, Table 8.3.1.21.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.21.3.3-2: MeasConfig (step 1, Table 8.3.1.21.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
measConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfig-A3-H		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

Table 8.3.1.21.3.3-3: MeasObjectEUTRA-GENERIC (step 1, Table 8.3.1.21.3.2-2)

Derivation Path: 36.508, Table 4.6.6-2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA SEQUENCE {			
MeasSubframePatternConfigNeigh-r10 {			
measSubframePatternNeigh-r10	'00110011001100110011001100110011001100110011'B		
subframePatternFDD-r10	'10110101101011010110101101011010110101101011'B		FDD
subframePatternTDD-r10 CHOICE {			TDD
subframeConfig1-5-r10	'11001110011100111001'B		
}			
measSubframeCellList-r10 {}	1 entry	Cell 2	
}			
}			

Table 8.3.1.21.3.3-4: ReportConfig-A3-H (step 1, Table 8.3.1.21.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-6 ReportConfigEUTRA-A3			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
timeToTrigger	ms0		
}			
}			
reportQuantity	sameAsTriggerQuantity		
}			

Table 8.3.1.21.3.3-5: MeasurementReport (step 4, Table 8.3.1.21.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId	PhysicalCellIdentity of Cell 2		
cgi-Info	Not present		
measResult SEQUENCE {			
rsrpResult	(0..97)		
additionalSI-Info-r9	Not present		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

Table 8.3.1.21.3.3-6: RRCConnectionReconfiguration (step 5, Table 8.3.1.21.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition HO

Table 8.3.1.21.3.3-7: MobilityControlInfo (Table 8.3.1.21.3.2-2)

Derivation Path: 36.508 clause 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 2		
carrierFreq	Not present		
}			

8.3.1.22 CA / Measurement configuration control and reporting / Intra E-UTRAN measurements / Event A1 / Event A2

8.3.1.22.1 CA / Measurement configuration control and reporting / Intra E-UTRAN measurements / Event A1 / Event A2 / Intra-band Contiguous CA

8.3.1.22.1.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurement configured for event A1 with event based
periodical reporting }
ensure that {
  when { Serving cell becomes better than absolute threshold plus hysteresis }
   then { UE sends MeasurementReport message at regular intervals while entering conditions for
event A1 are satisfied }
}
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and periodical measurement reporting triggered by event A1
ongoing}
ensure that {
  when { Serving cell becomes worse than absolute threshold minus hysteresis }
   then { UE stops sending MeasurementReport message }
}
```

(3)

```
with { UE in E-UTRA RRC_CONNECTED state and measurement configured for event A2 with event based
periodical reporting }
ensure that {
  when { Serving cell becomes worse than absolute threshold minus hysteresis }
   then { UE sends MeasurementReport message at regular intervals while entering conditions for
event A2 are satisfied }
}
```

(4)

```
with { UE in E-UTRA RRC_CONNECTED state and periodical measurement reporting triggered by event A2
ongoing}
ensure that {
  when { Serving cell becomes better than absolute threshold plus hysteresis }
   then { UE stops sending MeasurementReport message }
}
```

8.3.1.22.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.5.4.2 and 5.5.5. Unless otherwise stated these are Rel-10 requirements.

[TS 36.331, clause 5.5.4.2]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A1-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A1-2, as specified below, is fulfilled;

1> for this measurement, consider the primary or secondary cell that is configured on the frequency indicated in the associated *measObjectEUTRA* to be the serving cell;

Inequality A1-1 (Entering condition)

$Ms - Hys > Thresh$

Inequality A1-2 (Leaving condition)

$Ms + Hys < Thresh$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any offsets.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Thresh is the threshold parameter for this event (i.e. *a1-Threshold* as defined within *reportConfigEUTRA* for this event).

Ms is expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Hys is expressed in dB.

Thresh is expressed in the same unit as ***Ms***.

[TS 36.331, clause 5.5.4.3]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A2-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A2-2, as specified below, is fulfilled;

1> for this measurement, consider the primary or secondary cell that is configured on the frequency indicated in the associated *measObjectEUTRA* to be the serving cell;

Inequality A2-1 (Entering condition)

$Ms + Hys < Thresh$

Inequality A2-2 (Leaving condition)

$Ms - Hys > Thresh$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any offsets.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Thresh is the threshold parameter for this event (i.e. *a2-Threshold* as defined within *reportConfigEUTRA* for this event).

Ms is expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Hys is expressed in dB.

Thresh is expressed in the same unit as ***Ms***.

[TS 36.331, clause 5.5.5]

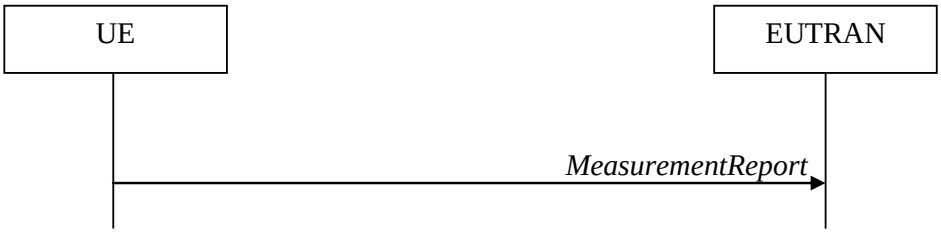

Figure 5.5.5-1: Measurement reporting

The purpose of this procedure is to transfer measurement results from the UE to E-UTRAN.

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultPCell* to include the quantities of the PCell;

1> set the *measResultServFreqList* to include for each SCell that is configured, if any, within *measResultSCell* the quantities of the concerned SCell;

8.3.1.22.1.3 Test description

8.3.1.22.1.3.1 Pre-test conditions

System Simulator:

- Cell 1 is the PCell and Cell 3 is the SCell to be added.
- Cell 3 is an Inactive SCell according to [18] cl. 6.3.4

- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.22.1.3.2 Test procedure sequence

Table 8.3.1.22.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1" - "T5" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.22.1.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 3	Remark
T0	Cell-specific RS EPRE	dBm/15k Hz	-85	-91	Power level of Scell (Cell 3) is such that *Ms + Hys < Thresh*
T1	Cell-specific RS EPRE	dBm/15k Hz	-85	-65	Power level of Scell (Cell 3) is such that entry condition for event A1 is satisfied *Ms – Hys > Thresh*
T2	Void				
T3	Cell-specific RS EPRE	dBm/15k Hz	-85	-91	Power level of Scell (Cell 3) is such that exit condition for event A1 is satisfied *Ms + Hys < Thresh*
T4	Cell-specific RS EPRE	dBm/15k Hz	-85	-70	Power level of Scell (Cell 3) is such that *Ms - Hys > Thresh*
T5	Cell-specific RS EPRE	dBm/15k Hz	-85	-96	Power level of Scell (Cell 3) is such that entry condition for event A2 is satisfied *Ms + Hys < Thresh*
T6	Cell-specific RS EPRE	dBm/15k Hz	-85	-70	Power level of Scell (Cell 3) is such that exit condition for event A2 is satisfied *Ms - Hys > Thresh*

Table 8.3.1.22.1.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an RRCConnectionReconfiguration message to configure SCell (Cell 3).	**<--**	*RRCConnectionReconfiguration*	**-**	**-**
2	The UE transmits an *RRCConnectionReconfigurationComplete* message.	**-->**	*RRCConnectionReconfigurationComplete*	**-**	**-**
3	SS transmits an *RRCConnectionReconfiguration* message including *MeasConfig* to setup intra LTE measurement and reporting for event A1 (measurements considered for the Scell (Cell 3)).	<--	*RRCConnectionReconfiguration*	-	-
4	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
5	SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.22.1.3.2-1.	-	-	-	-
6	Check: Does the UE transmit a *MeasurementReport* message to report event A1 with the measured RSRP and RSRQ value (measurements considered for the Scell (Cell 3))?	-->	*MeasurementReport*	1	P
-	EXCEPTION: Step 7 below is repeated until 3 *MeasurementReport* messages are received from the UE	-	-	-	-
7	Check: Does the UE transmit a *MeasurementReport* message to report event A1 with the measured RSRP and RSRQ value (measurements considered for the Pcell (Cell 1))?	-->	*MeasurementReport*	1	P
8	SS re-adjusts the cell-specific reference signal level according to row " T3" in table 8.3.1.22.1.3.2-1.	-	-	-	-
9	Wait and ignore *MeasurementReport* messages for 15 s to allow change of power levels for Cell 3 and UE measurement.	-	-	-	-
10	Check: Does the UE attempt to transmit an uplink message within the next 10s?	-	-	2	F
10A	SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to remove intra LTE measurement and reporting for event A1 (measurements considered for the Scell (Cell 3)).	<--	*RRCConnectionReconfiguration*	-	-
10B	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
11	The SS changes power level according to row "T4" in Table 8.3.1.22.1.3.2-1.				
12	SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup intra LTE measurement and reporting for event A2 (measurements considered for the Scell (Cell 3)).	<--	*RRCConnectionReconfiguration*	-	-
13	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
14	SS re-adjusts the cell-specific reference signal level according to row "T5" in table 8.3.1.22.1.3.2-1.	-	-	-	-
15	Check: Does the UE transmit a *MeasurementReport* message to report event	-->	*MeasurementReport*	3	P

	A2 with the measured RSRP and RSRQ value (measurements considered for the Scell (Cell 3))?				
-	EXCEPTION: Step 5 below is repeated until 3 *MeasurementReport* messages are received from the UE	-	-	-	-
16	Check: Does the UE transmit a *MeasurementReport* message to report event A2 with the measured RSRP and RSRQ value (measurements considered for the Scell (Cell 3))?	-->	*MeasurementReport*	3	P
17	SS re-adjusts the cell-specific reference signal level according to row "T6" in table 8.3.1.22.1.3.2-1.	-	-	-	-
18	Wait and ignore *MeasurementReport* messages for 15 s to allow change of power levels for Cell 3 and UE measurement.	-	-	-	-
19	Check: Does the UE attempt to transmit an uplink message within the next 10s?	-		4	F

8.3.1.22.1.3.3 Specific message contents

Table 8.3.1.22.1.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.22.1.3.2-2)

Derivation Path: 36.508 Table 4.6.1-8, condition SCell_AddMod

Table 8.3.1.22.1.3.3-2: *SCellToAddMod-r10* (Table 8.3.1.22.1.3.3-1)

Derivation Path: 36.508, Table 4.6.3-19D			
Information Element	**Value/remark**	**Comment**	**Condition**
SCellToAddMod-r10 ::= SEQUENCE {			
sCellIndex-r10	1		
cellIdentification-r10 SEQUENCE {			
physCellId-r10	PhysicalCellIdentity of Cell 3		
dl-CarrierFreq-r10	Same downlink EARFCN as used for Cell 3		
}			
}			

Table 8.3.1.22.1.3.3-3: *RadioResourceConfigCommonSCell-r10* (Table 8.3.1.22.1.3.3-2)

Derivation Path: 36.508, Table 4.6.3-13A			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigCommonSCell-r10 ::= SEQUENCE {			
nonUL-Configuration-r10 SEQUENCE {			
dl-Bandwidth-r10	Same downlink system bandwidth as used for Cell 3		
}			
}			

Table 8.3.1.22.1.3.3-3A: *RRCConnectionReconfiguration* (step 3 and step 12, Table 8.3.1.22.1.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.1.22.1.3.3-4: *MeasConfig* (step 3, Table 8.3.1.22.1.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/Remark**	**Comment**	**Condition**
measConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)	Cell 1	
measObjectId[2]	IdMeasObject-f2		
measObject[2]	MeasObjectEUTRA-GENERIC(f2)	Cell 3	
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A1		
reportConfig[1]	ReportConfig-A1-(-72)		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f2		
reportConfigId[1]	IdReportConfig-A1		
}			
}			

Table 8.3.1.22.1.3.3-5: *ReportConfig-A1*-(-72) (Table 8.3.1.22.1.3.3-4)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-4			
Information Element	**Value/Remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
hysteresis	6	3dB	
}			
}			
reportAmount	infinity		
}			

Table 8.3.1.22.1.3.3-6: *MeasurementReport* (steps 6 and 7, Table 8.3.1.22.1.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultPCell::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultForECID-r9	Not present		
locationInfo-r10	Not present		
measResultServFreqList-r10 SEQUENCE (SIZE (1..maxServCell-r10)) OF SEQUENCE {			
servFreqId-r10	1		
measResultSCell-r10 SEQUENCE {		Cell 3	
rsrpResultSCell-r10	(0..97)		
rsrqResultSCell-r10	(0..34)		
}			
}			
}			
}			
}			
}			

Table 8.3.1.22.1.3.3-7: *MeasConfig* (step 10A, Table 8.3.1.22.1.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/Remark**	**Comment**	**Condition**
measConfig ::= SEQUENCE {			
reportConfigToRemoveList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId	IdReportConfig-A1		
}			
}			

Table 8.3.1.22.1.3.3-8: *MeasConfig* (step 12, Table 8.3.1.22.1.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/Remark**	**Comment**	**Condition**
measConfig ::= SEQUENCE {			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A2		
reportConfig[1]	ReportConfig-A2-(-83)		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f2		
reportConfigId[1]	IdReportConfig-A2		
}			
}			

Table 8.3.1.22.1.3.3-9: *ReportConfig-A2*-(-83) (Table 8.3.1.22.1.3.3-8)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
hysteresis	6	3 dB	
}			
}			
reportAmount	infinity		
}			

Table 8.3.1.22.1.3.3-10: *MeasurementReport* (steps 15 and 16, Table 8.3.1.22.1.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultPCell::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultForECID-r9	Not present		
locationInfo-r10	Not present		
measResultServFreqList-r10 SEQUENCE (SIZE (1..maxServCell-r10)) OF SEQUENCE {			
servFreqId-r10	1		
measResultSCell-r10 SEQUENCE {		Cell 3	
rsrpResultSCell-r10	(0..97)		
rsrqResultSCell-r10	(0..34)		
}			
}			
}			
}			
}			
}			

8.3.1.22.2 CA / Measurement configuration control and reporting / Intra E-UTRAN measurements / Event A1 / Event A2 / Inter-band CA

8.3.1.22.2.1 Test Purpose (TP)

Same as TC 8.3.1.22.1 but applied to Inter-band CA case.

8.3.1.22.2.2 Conformance requirements

Same as TC 8.3.1.22.1 but applied to Inter-band CA case.

8.3.1.22.2.3 Test description

8.3.1.22.2.3.1 Pre-test conditions

Same as test case 8.3.1.22.1 with the following differences:

- CA configuration: Inter-band CA replaces Inter-band Contiguous CA
- Cells configuration: Cell 10 replaces Cell 3
- Cell 10 is an Inactive SCell according to [18] cl. 6.3.4

8.3.1.22.2.3.2 Test procedure sequence

Same as test case 8.3.1.22.1 with the following differences:

- CA configuration: Inter-band CA replaces Inter-band Contiguous CA
- Cells configuration: Cell 10 replaces Cell 3

8.3.1.22.2.3.3 Specific message contents

Same as test case 8.3.1.22.1 with the following differences.

NOTE: For simplicity the steps referred below are steps in test case 8.3.1.22.1.

Table 8.3.1.12.2.3.3-2: *MeasConfig* (step 3, Table 8.3.1.22.1.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/Remark**	**Comment**	**Condition**
measConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 Entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)	Cell1	
measObjectId[2]	IdMeasObject-f5		
measObject[2]	MeasObjectEUTRA-GENERIC(f5)	Cell 10	
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A1		
reportConfig[1]	ReportConfig-A1-H		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f5		
reportConfigId[1]	IdReportConfig-A1		
}			
}			

Table 8.3.1.22.2.3.3-2: *MeasConfig* (step 12, Table 8.3.1.22.1.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/Remark**	**Comment**	**Condition**
measConfig ::= SEQUENCE {			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A2		
reportConfig[1]	ReportConfig-A2-H		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f5		
reportConfigId[1]	IdReportConfig-A2		
}			
}			

8.3.1.23 Measurement configuration control and reporting / Intra E-UTRAN measurements / Event A4

8.3.1.23.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurement configured for event A4 with event based
periodical reporting }
ensure that {
  when { Neighbour cell becomes better than absolute threshold }
    then { UE sends MeasurementReport message at regular intervals while entering condition for
event A4 is satisfied }
            }
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and periodical measurement reporting triggered by event A4
ongoing }
ensure that {
  when { Neighbour cell becomes worse than absolute threshold }
    then { UE stops sending MeasurementReport message }
            }
```

8.3.1.23.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.4.1, 5.5.4.5 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

...

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> if the *ue-RxTxTimeDiffPeriodical*, *eventA1* or *eventA2* is configured in the corresponding *reportConfig*:

5> consider only the serving cell to be applicable;

4> else:

5> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

...

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for

this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

...

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

...

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

[TS 36.331, clause 5.5.4.5]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A4-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A4-2, as specified below, is fulfilled;

Inequality A4-1 (Entering condition)

$$Mn + Ofn + Ocn - Hys > Thresh$$

Inequality A4-2 (Leaving condition)

$Mn + Ofn + Ocn + Hys < Thresh$

The variables in the formula are defined as follows:

Mn is the measurement result of the neighbouring cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the neighbour cell (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell).

Ocn is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Thresh is the threshold parameter for this event (i.e. *a4-Threshold* as defined within *reportConfigEUTRA* for this event).

Mn is expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Ofn, Ocn, Hys are expressed in dB.

Thresh is expressed in the same unit as ***Ms***.

[TS 36.331, clause 5.5.5]

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

...

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

...

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.1.23.3 Test description

8.3.1.23.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 2.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.23.3.2 Test procedure sequence

Table 8.3.1.23.3.2-1 illustrates the downlink power levels to be applied for Cell 1 and Cell 2 at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while rows marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.23.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 2	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-85	-97	Power levels are such that entry condition for event A4 is not satisfied: *Mn + Ofn + Ocn - Hys < Thresh*
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	-79	Power levels are such that entry condition for event A4 is satisfied: *Mn + Ofn + Ocn - Hys > Thresh*
T2	Cell-specific RS EPRE	dBm/15 kHz	-85	-97	Power levels are such that entry condition for event A4 is not satisfied: *Mn + Ofn + Ocn - Hys < Thresh*

Table 8.3.1.23.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including measConfig to setup intra LTE measurement and reporting for event A4 on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE attempt to transmit an uplink message within the next 30s?	-	-	2	F
4	SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.23.3.2-1.	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 to report event A4 with the measured RSRP and RSRQ value for Cell 2?	-->	*MeasurementReport*	1	P
-	EXCEPTION: Step 6 below is repeated until 3 *MeasurementReport* messages are received from the UE	-	-	-	-
6	Check: Does the UE transmit a *MeasurementReport* message on Cell 1, with the measured RSRP and RSRQ value for Cell 2?	-->	*MeasurementReport*	1	P
7	SS re-adjusts the cell-specific reference signal level according to row "T2" in table 8.3.1.23.3.2-1.	-	-	-	-
8	Wait and ignore *MeasurementReport* messages for 15 s to allow change of power levels for Cell 2 and UE measurement.	-	-	-	-
9	Check: Does the UE attempt to transmit an uplink message within the next 10s?	-	-	2	F

8.3.1.23.3.3 Specific message contents

Table 8.3.1.23.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.23.3.2-2)

Derivation Path: 36.508 Table 4.6.1-8 with condition MEAS

Table 8.3.1.23.3.3-2: *MeasConfig* (step 1, Table 8.3.1.23.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE{	1 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A4		
reportConfig[1]	ReportConfigEUTRA-A4-RECONF		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A4		
}			
}			

Table 8.3.1.23.3.3-3: *ReportConfigEUTRA-A4-RECONF* (step 1, Table 8.3.1.23.3.2-2)

Derivation Path: 36.508, Table 4.6.6-6AA ReportConfigEUTRA-A4(-88)			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
reportAmount	infinity		
}			

Table 8.3.1.23.3.3-4: *MeasurementReport* (step 5 and 6, Table 8.3.1.23.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry	Report Cell 2	
physCellId[1]	PhysicalCellIdentity of Cell 2		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
additionalSI-Info-r9	Not present		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

8.3.1.24 Measurement configuration control and reporting / Intra E-UTRAN measurements / Event A5

8.3.1.24.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurement configured for event A5 with event based
periodical reporting }
ensure that {
  when { Serving cell becomes worse than absolute threshold1 and neighbour cell becomes better than
absolute threshold2 }
    then { UE sends MeasurementReport message at regular intervals while entering conditions for
event A5 are satisfied }
            }
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and periodical measurement reporting triggered by event A5
ongoing }
ensure that {
  when { Serving cell becomes better than absolute threshold1 or neighbour cell becomes worse than
absolute threshold2 }
    then { UE stops sending MeasurementReport message }
            }
```

8.3.1.24.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.4.1, 5.5.4.6 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

...

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> if the *ue-RxTxTimeDiffPeriodical*, *eventA1* or *eventA2* is configured in the corresponding *reportConfig*:

5> consider only the serving cell to be applicable;

4> else:

5> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

...

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

...

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

...

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

[TS 36.331, clause 5.5.4.6]

The UE shall:

1> consider the entering condition for this event to be satisfied when both conditions A5-1 and condition A5-2, as specified below, are fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A5-3 or condition A5-4, i.e. at least one of the two, as specified below, is fulfilled;

Inequality A5-1 (Entering condition 1)

$Ms + Hys < Thresh1$

Inequality A5-2 (Entering condition 2)

$Mn + Ofn + Ocn - Hys > Thresh2$

Inequality A5-3 (Leaving condition 1)

$Ms - Hys > Thresh1$

Inequality A5-4 (Leaving condition 2)

$Mn + Ofn + Ocn + Hys < Thresh2$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any offsets.

Mn is the measurement result of the neighbouring cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the neighbour cell (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell).

Ocn is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Thresh1 is the threshold parameter for this event (i.e. *a5-Threshold1* as defined within *reportConfigEUTRA* for this event).

Thresh2 is the threshold parameter for this event (i.e. *a5-Threshold2* as defined within *reportConfigEUTRA* for this event).

Mn, Ms are expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Ofn, Ocn, Hys are expressed in dB.

Thresh1 is expressed in the same unit as ***Ms***.

Thresh2 is expressed in the same unit as ***Mn***.

[TS 36.331, clause 5.5.5]

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

...

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

...

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.1.24.3 Test description

8.3.1.24.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 2.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.24.3.2 Test procedure sequence

Table 8.3.1.24.3.2-1 illustrates the downlink power levels to be applied for Cell 1 and Cell 2 at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while rows marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.24.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 2	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-85	-97	Power levels are such that entry condition for event A5 is not satisfied: *Ms - Hys > Thresh1* or *Mn + Ofn + Ocn + Hys < Thresh2*
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	-79	Power levels are such that entry condition for event A5 is satisfied: *Ms + Hys < Tresh1* and *Mn + Ofn + Ocn - Hys > Thresh2*
T2	Cell-specific RS EPRE	dBm/15 kHz	-65	-79	Power levels are such that entry condition for event A5 is not satisfied: *Ms - Hys > Thresh1* or *Mn + Ofn + Ocn + Hys < Thresh2*

Table 8.3.1.24.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including measConfig to setup intra LTE measurement and reporting for event A5 on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE attempt to transmit an uplink message within the next 30s?	-	-	2	F
4	SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.24.3.2-1.	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 to report event A5 with the measured RSRP and RSRQ value for Cell 2?	-->	*MeasurementReport*	1	P
-	EXCEPTION: Step 6 below is repeated until 3 *MeasurementReport* messages are received from the UE	-	-	-	-
6	Check: Does the UE transmit a *MeasurementReport* message on Cell 1, with the measured RSRP and RSRQ value for Cell 2?	-->	*MeasurementReport*	1	P
7	SS re-adjusts the cell-specific reference signal level according to row "T2" in table 8.3.1.24.3.2-1.	-	-	-	-
8	Wait and ignore *MeasurementReport* messages for 15 s to allow change of power levels for Cell 2 and UE measurement.	-	-	-	-
9	Check: Does the UE attempt to transmit an uplink message within the next 10s?	-	-	2	F

8.3.1.24.3.3 Specific message contents

Table 8.3.1.24.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.24.3.2-2)

Derivation Path: 36.508 Table 4.6.1-8 with condition MEAS

Table 8.3.1.24.3.3-2: *MeasConfig* (step 1, Table 8.3.1.24.3.2-2)

Derivation Path: 36.508, Table 4.6.1-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE{	1 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A5		
reportConfig[1]	ReportConfigEUTRA-A5-RECONF		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A5		
}			
}			

Table 8.3.1.24.3.3-3: *ReportConfigEUTRA-A5-RECONF* (step 1, Table 8.3.1.24.3.2-2)

Derivation Path: 36.508, Table 4.6.6-6AB ReportConfigEUTRA-A5(-76, -88)			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
reportAmount	infinity		
}			

Table 8.3.1.24.3.3-4: *MeasurementReport* (step 5 and 6, Table 8.3.1.24.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry	Report Cell 2	
physCellId[1]	PhysicalCellIdentity of Cell 2		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
additionalSI-Info-r9	Not present		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

8.3.1.25 Measurement configuration control and reporting / Intra E-UTRAN measurements / Event A5 / RSRQ based measurements

8.3.1.25.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurement configured for event A5 with event based
periodical reporting and triggerQuantity set to rsrq }
ensure that {
  when { Serving cell becomes worse than absolute threshold1 and neighbour cell becomes better than
absolute threshold2 }
    then { UE sends MeasurementReport message at regular intervals while entering conditions for
event A5 are satisfied }
            }
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and periodical measurement reporting triggered by event A5
ongoing and triggerQuantity set to rsrq }
ensure that {
  when { Serving cell becomes better than absolute threshold1 or neighbour cell becomes worse than
absolute threshold2 }
    then { UE stops sending MeasurementReport message }
            }
```

8.3.1.25.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.4.1, 5.5.4.6 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

...

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> if the *ue-RxTxTimeDiffPeriodical*, *eventA1* or *eventA2* is configured in the corresponding *reportConfig*:

5> consider only the serving cell to be applicable;

4> else:

5> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

...

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

...

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

...

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

[TS 36.331, clause 5.5.4.6]

The UE shall:

1> consider the entering condition for this event to be satisfied when both conditions A5-1 and condition A5-2, as specified below, are fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A5-3 or condition A5-4, i.e. at least one of the two, as specified below, is fulfilled;

Inequality A5-1 (Entering condition 1)

$Ms + Hys < Thresh1$

Inequality A5-2 (Entering condition 2)

$Mn + Ofn + Ocn - Hys > Thresh2$

Inequality A5-3 (Leaving condition 1)

$Ms - Hys > Thresh1$

Inequality A5-4 (Leaving condition 2)

$Mn + Ofn + Ocn + Hys < Thresh2$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any offsets.

Mn is the measurement result of the neighbouring cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the neighbour cell (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell).

Ocn is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Thresh1 is the threshold parameter for this event (i.e. *a5-Threshold1* as defined within *reportConfigEUTRA* for this event).

Thresh2 is the threshold parameter for this event (i.e. *a5-Threshold2* as defined within *reportConfigEUTRA* for this event).

Mn, Ms are expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Ofn, Ocn, Hys are expressed in dB.

Thresh1 is expressed in the same unit as ***Ms***.

Thresh2 is expressed in the same unit as ***Mn***.

[TS 36.331, clause 5.5.5]

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

...

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

...

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.1.25.3 Test description

8.3.1.25.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 2.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.25.3.2 Test procedure sequence

Table 8.3.1.25.3.2-1 illustrates the downlink power levels to be applied for Cell 1 and Cell 2 at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while rows marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.25.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 2	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-85	-98	Power levels are such that entry condition for event A5 is not satisfied: *Ms - Hys > Thresh1* or *Mn + Ofn + Ocn + Hys < Thresh2*
	RSRQ	dB	-7.7	-20.7	
	Noc	dBm/15 kHz	-90	-90	
T1	Cell-specific RS EPRE	dBm/15 kHz	-91	-85	Power levels are such that entry condition for event A5 is satisfied: *Ms + Hys < Tresh1* and *Mn + Ofn + Ocn - Hys > Thresh2*
	RSRQ	dB	-14	-8	
T2	Cell-specific RS EPRE	dBm/15 kHz	-65	-85	Power levels are such that entry condition for event A5 is not satisfied: *Ms - Hys > Thresh1* or *Mn + Ofn + Ocn + Hys < Thresh2*
	RSRQ	dB	-3.13	-23.13	

Table 8.3.1.25.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including measConfig to setup intra LTE measurement and reporting for event A5 on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE attempt to transmit an uplink message within the next 30s?	-	-	2	F
4	SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.25.3.2-1.	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 to report event A5 with the measured RSRP and RSRQ value for Cell 2?	-->	*MeasurementReport*	1	P
-	EXCEPTION: Step 6 below is repeated until 3 *MeasurementReport* messages are received from the UE	-	-	-	-
6	Check: Does the UE transmit a *MeasurementReport* message on Cell 1, with the measured RSRP and RSRQ value for Cell 2?	-->	*MeasurementReport*	1	P
7	SS re-adjusts the cell-specific reference signal level according to row "T2" in table 8.3.1.25.3.2-1.	-	-	-	-
8	Wait and ignore *MeasurementReport* messages for 15 s to allow change of power levels for Cell 2 and UE measurement.	-	-	-	-
9	Check: Does the UE attempt to transmit an uplink message within the next 10s?	-	-	2	F

8.3.1.25.3.3 Specific message contents

Table 8.3.1.25.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.25.3.2-2)

Derivation Path: 36.508 Table 4.6.1-8 with condition MEAS

Table 8.3.1.25.3.3-2: *MeasConfig* (step 1, Table 8.3.1.25.3.2-2)

Derivation Path: 36.508, Table 4.6.1-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE{	1 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A5		
reportConfig[1]	ReportConfigEUTRA-A5-RECONF		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A5		
}			
}			

Table 8.3.1.25.3.3-3: *ReportConfigEUTRA-A5-RECONF* (step 1, Table 8.3.1.25.3.2-2)

Derivation Path: 36.508, Table 4.6.6-6AB ReportConfigEUTRA-A5(-4, -14) with condition RSRQ			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
reportAmount	infinity		
}			

Table 8.3.1.25.3.3-4: *MeasurementReport* (step 5 and 6, Table 8.3.1.25.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry	Report Cell 2	
physCellId[1]	PhysicalCellIdentity of Cell 2		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
additionalSI-Info-r9	Not present		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

8.3.1.26 Measurement configuration control and reporting / Intra E-UTRAN measurements / Event A5 (Inter-frequency measurements)

8.3.1.26.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurement configured for event A5 with event based
periodical reporting }
ensure that {
  when { Serving cell becomes worse than absolute threshold1 and inter-frequency neighbour cell
becomes better than absolute threshold2 }
    then { UE sends MeasurementReport message at regular intervals while entering conditions for
event A5 are satisfied }
            }
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and periodical measurement reporting triggered by event A5
ongoing }
ensure that {
  when { Serving cell becomes better than absolute threshold1 or inter-frequency neighbour cell
becomes worse than absolute threshold2 }
    then { UE stops sending MeasurementReport message }
            }
```

8.3.1.26.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.4.1, 5.5.4.6 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

...

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> if the *ue-RxTxTimeDiffPeriodical*, *eventA1* or *eventA2* is configured in the corresponding *reportConfig*:

5> consider only the serving cell to be applicable;

4> else:

5> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

...

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

...

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

...

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

[TS 36.331, clause 5.5.4.6]

The UE shall:

1> consider the entering condition for this event to be satisfied when both conditions A5-1 and condition A5-2, as specified below, are fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A5-3 or condition A5-4, i.e. at least one of the two, as specified below, is fulfilled;

Inequality A5-1 (Entering condition 1)

$Ms + Hys < Thresh1$

Inequality A5-2 (Entering condition 2)

$Mn + Ofn + Ocn - Hys > Thresh2$

Inequality A5-3 (Leaving condition 1)

$Ms - Hys > Thresh1$

Inequality A5-4 (Leaving condition 2)

$Mn + Ofn + Ocn + Hys < Thresh2$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any offsets.

Mn is the measurement result of the neighbouring cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the neighbour cell (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell).

Ocn is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Thresh1 is the threshold parameter for this event (i.e. *a5-Threshold1* as defined within *reportConfigEUTRA* for this event).

Thresh2 is the threshold parameter for this event (i.e. *a5-Threshold2* as defined within *reportConfigEUTRA* for this event).

Mn, Ms are expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Ofn, Ocn, Hys are expressed in dB.

Thresh1 is expressed in the same unit as ***Ms***.

Thresh2 is expressed in the same unit as ***Mn***.

[TS 36.331, clause 5.5.5]

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

...

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

...

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.1.26.3 Test description

8.3.1.26.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 3.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.26.3.2 Test procedure sequence

Table 8.3.1.26.3.2-1 illustrates the downlink power levels to be applied for Cell 1 and Cell 3 at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while rows marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.26.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 3	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-85	-97	Power levels are such that entry condition for event A5 is not satisfied: *Ms - Hys > Thresh1* or *Mn + Ofn + Ocn + Hys < Thresh2*
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	-73	Power levels are such that entry condition for event A5 is satisfied: *Ms + Hys < Tresh1* and *Mn + Ofn + Ocn - Hys > Thresh2*
T2	Cell-specific RS EPRE	dBm/15 kHz	-65	-73	Power levels are such that entry condition for event A5 is not satisfied: *Ms - Hys > Thresh1* or *Mn + Ofn + Ocn + Hys < Thresh2*

Table 8.3.1.26.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including measConfig to setup intra LTE measurement and reporting for event A5 on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE attempt to transmit an uplink message within the next 30s?	-	-	2	F
4	SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.26.3.2-1.	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 to report event A5 with the measured RSRP and RSRQ value for Cell 3?	-->	*MeasurementReport*	1	P
-	EXCEPTION: Step 6 below is repeated until 3 *MeasurementReport* messages are received from the UE	-	-	-	-
6	Check: Does the UE transmit a *MeasurementReport* message on Cell 1, with the measured RSRP and RSRQ value for Cell 3?	-->	*MeasurementReport*	1	P
7	SS re-adjusts the cell-specific reference signal level according to row "T2" in table 8.3.1.26.3.2-1.	-	-	-	-
8	Wait and ignore *MeasurementReport* messages for 15 s to allow change of power levels for Cell 3 and UE measurement.	-	-	-	-
9	Check: Does the UE attempt to transmit an uplink message within the next 10s?	-	-	2	F

8.3.1.26.3.3 Specific message contents

Table 8.3.1.26.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.26.3.2-2)

Derivation Path: 36.508 Table 4.6.1-8 with condition MEAS

Table 8.3.1.26.3.3-2: *MeasConfig* (step 1, Table 8.3.1.26.3.2-2)

Derivation Path: 36.508, Table 4.6.1-1 with condition INTER-FREQ			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE{	2 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f2		
measObject[2]	MeasObjectEUTRA-GENERIC(f2)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A5		
reportConfig[1]	ReportConfigEUTRA-A5-RECONF		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A5		
measId[2]	2		
measObjectId[2]	IdMeasObject-f2		
reportConfigId[2]	IdReportConfig-A5		
}			
}			

Table 8.3.1.26.3.3-3: *ReportConfigEUTRA-A5-RECONF* (step 1, Table 8.3.1.26.3.2-2)

Derivation Path: 36.508, Table 4.6.6-6AB ReportConfigEUTRA-A5(-76, -85)			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
reportAmount	infinity		
}			

Table 8.3.1.26.3.3-4: *MeasurementReport* (step 5 and 6, Table 8.3.1.26.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry	Report Cell 3	
physCellId[1]	PhysicalCellIdentity of Cell 3		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
additionalSI-Info-r9	Not present		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

8.3.1.27 Measurement configuration control and reporting / Intra E-UTRAN measurements / Event A5 (Inter-frequency measurements) / RSRQ based measurements

8.3.1.27.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurement configured for event A5 with event based
periodical reporting and triggerQuantity set to rsrq }
ensure that {
  when { Serving cell becomes worse than absolute threshold1 and inter-frequency neighbour cell
becomes better than absolute threshold2 }
    then { UE sends MeasurementReport message at regular intervals while entering conditions for
event A5 are satisfied }
           }
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and periodical measurement reporting triggered by event A5
ongoing and triggerQuantity set to rsrq }
ensure that {
  when { Serving cell becomes better than absolute threshold1 or inter-frequency neighbour cell
becomes worse than absolute threshold2 }
    then { UE stops sending MeasurementReport message }
           }
```

8.3.1.27.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.4.1, 5.5.4.6 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

...

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> if the *ue-RxTxTimeDiffPeriodical*, *eventA1* or *eventA2* is configured in the corresponding *reportConfig*:

5> consider only the serving cell to be applicable;

4> else:

5> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

...

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for

all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

...

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

...

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

[TS 36.331, clause 5.5.4.6]

The UE shall:

1> consider the entering condition for this event to be satisfied when both conditions A5-1 and condition A5-2, as specified below, are fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A5-3 or condition A5-4, i.e. at least one of the two, as specified below, is fulfilled;

Inequality A5-1 (Entering condition 1)

$Ms + Hys < Thresh1$

Inequality A5-2 (Entering condition 2)

$Mn + Ofn + Ocn - Hys > Thresh2$

Inequality A5-3 (Leaving condition 1)

$Ms - Hys > Thresh1$

Inequality A5-4 (Leaving condition 2)

$Mn + Ofn + Ocn + Hys < Thresh2$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any offsets.

Mn is the measurement result of the neighbouring cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the neighbour cell (i.e. *offsetFreq* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell).

Ocn is the cell specific offset of the neighbour cell (i.e. *cellIndividualOffset* as defined within *measObjectEUTRA* corresponding to the frequency of the neighbour cell), and set to zero if not configured for the neighbour cell.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Thresh1 is the threshold parameter for this event (i.e. *a5-Threshold1* as defined within *reportConfigEUTRA* for this event).

Thresh2 is the threshold parameter for this event (i.e. *a5-Threshold2* as defined within *reportConfigEUTRA* for this event).

Mn, Ms are expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Ofn, Ocn, Hys are expressed in dB.

Thresh1 is expressed in the same unit as ***Ms***.

Thresh2 is expressed in the same unit as ***Mn***.

[TS 36.331, clause 5.5.5]

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

...

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

...

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.1.27.3 Test description

8.3.1.27.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 3.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.27.3.2 Test procedure sequence

Table 8.3.1.27.3.2-1 illustrates the downlink power levels to be applied for Cell 1 and Cell 3 at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while rows marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.27.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 3	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-80	-100	Power levels are such that entry condition for event A5 is not satisfied: *Ms - Hys > Thresh1* or *Mn + Ofn + Ocn + Hys < Thresh2*
	RSRQ	dB	-5.05	-11.46	
	Noc	dBm/15 kHz	-90	-100	
T1	Cell-specific RS EPRE	dBm/15 kHz	-91	-85	Power levels are such that entry condition for event A5 is satisfied: *Ms + Hys < Tresh1* and *Mn + Ofn + Ocn - Hys > Thresh2*
	RSRQ	dB	-12.33	-3.76	
T2	Cell-specific RS EPRE	dBm/15 kHz	-65	-85	Power levels are such that entry condition for event A5 is not satisfied: *Ms - Hys > Thresh1* or *Mn + Ofn + Ocn + Hys < Thresh2*
	RSRQ	dB	-3.09	-3.76	

Table 8.3.1.27.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including measConfig to setup intra LTE measurement and reporting for event A5 on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE attempt to transmit an uplink message within the next 30s?	-	-	2	F
4	SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.1.27.3.2-1.	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 to report event A5 with the measured RSRP and RSRQ value for Cell 3?	-->	*MeasurementReport*	1	P
-	EXCEPTION: Step 6 below is repeated until 3 *MeasurementReport* messages are received from the UE	-	-	-	-
6	Check: Does the UE transmit a *MeasurementReport* message on Cell 1, with the measured RSRP and RSRQ value for Cell 3?	-->	*MeasurementReport*	1	P
7	SS re-adjusts the cell-specific reference signal level according to row "T2" in table 8.3.1.27.3.2-1.	-	-	-	-
8	Wait and ignore *MeasurementReport* messages for 15 s to allow change of power levels for Cell 3 and UE measurement.	-	-	-	-
9	Check: Does the UE attempt to transmit an uplink message within the next 10s?	-	-	2	F

8.3.1.27.3.3 Specific message contents

Table 8.3.1.27.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.27.3.2-2)

Derivation Path: 36.508 Table 4.6.1-8 with condition MEAS

Table 8.3.1.27.3.3-2: *MeasConfig* (step 1, Table 8.3.1.27.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1 with condition INTER-FREQ			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE{	2 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f2		
measObject[2]	MeasObjectEUTRA-GENERIC(f2)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A5		
reportConfig[1]	ReportConfigEUTRA-A5-RECONF		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A5		
measId[2]	2		
measObjectId[2]	IdMeasObject-f2		
reportConfigId[2]	IdReportConfig-A5		
}			
}			

Table 8.3.1.27.3.3-3: *ReportConfigEUTRA-A5-RECONF* (step 1, Table 8.3.1.27.3.2-2)

Derivation Path: 36.508, Table 4.6.6-6AB ReportConfigEUTRA-A5(-4, -8) with condition RSRQ			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
reportAmount	infinity		
}			

Table 8.3.1.27.3.3-4: *MeasurementReport* (step 5 and 6, Table 8.3.1.27.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry	Report Cell 3	
physCellId[1]	PhysicalCellIdentity of Cell 3		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
additionalSI-Info-r9	Not present		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

8.3.1.28 eICIC / Measurement configuration control and reporting / Event A3 / RSRP and RSRQ measurement / Serving ABS

8.3.1.28.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment and initial security activation procedure
}
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a MeasObject provided with
all parameters including the neighbour cell measurement restriction pattern measSubframePatternPCell
corresponding to Serving cell ABS pattern }
    then { UE transmits an RRCConnectionReconfigurationComplete message }
            }
```

(2)

```
with { UE having transmitted an RRCConnectionReconfigurationComplete message and applied serving
cell measurement restriction pattern measSubframePatternPCell, corresponding to serving cell ABS
pattern }
ensure that {
  when { UE transmits MeasurementReport after A3 event }
    then { UE transmits RSRP and RSRQ measurements done in measSubframePatternPCell }
            }
```

8.3.1.28.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.10.0, 5.3.10.8 and 5.5.3.1.

[TS 36.331, clause 5.3.10.0]

The UE shall:

…

1> if the received *radioResourceConfigDedicated* includes the *measSubframePatternPCell*:

2> reconfigure the time domain measurement resource restriction for the serving cell as specified in 5.3.10.8;

[TS 36.331, clause 5.3.10.8]

The UE shall:

1> if the received *measSubframePatternPCell* is set to *release*:

2> release the time domain measurement resource restriction for the PCell, if previously configured

1> else:

2> apply the time domain measurement resource restriction for the PCell in accordance with the received *measSubframePatternPCell;*

[TS 36.331, clause 5.5.3.1]

For all measurements the UE applies the layer 3 filtering as specified in 5.5.3.2, before using the measured results for evaluation of reporting criteria or for measurement reporting.

The UE shall:

1> whenever the UE has a *measConfig*, perform RSRP and RSRQ measurements for each serving cell, applying for the PCell the time domain measurement resource restriction in accordance with *measSubframePatternPCell*, if configured;

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *purpose* for the associated *reportConfig* is set to *reportCGI*:

3> if *si-RequestForHO* is configured for the associated *reportConfig*:

4> perform the corresponding measurements on the frequency and RAT indicated in the associated *measObject* using autonomous gaps as necessary;

3> else:

4> perform the corresponding measurements on the frequency and RAT indicated in the associated *measObject* using available idle periods or using autonomous gaps as necessary;

NOTE 1: If autonomous gaps are used to perform measurements, the UE is allowed to temporarily abort communication with all serving cell(s), i.e. create autonomous gaps to perform the corresponding measurements within the limits specified in TS 36.133 [16]. Otherwise, the UE only supports the measurements with the purpose set to *reportCGI* only if E-UTRAN has provided sufficient idle periods.

3> try to acquire the global cell identity of the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* by acquiring the relevant system information from the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is an E-UTRAN cell:

4> try to acquire the CSG identity, if the CSG identity is broadcast in the concerned cell;

4> try to acquire the *trackingAreaCode* in the concerned cell;

4> try to acquire the list of additional PLMN Identities, as included in the *plmn-IdentityList*, if multiple PLMN identities are broadcast in the concerned cell;

NOTE 2: The 'primary' PLMN is part of the global cell identity.

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a UTRAN cell:

4> try to acquire the LAC, the RAC and the list of additional PLMN Identities, if multiple PLMN identities are broadcast in the concerned cell;

4> try to acquire the CSG identity, if the CSG identity is broadcast in the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a GERAN cell:

4> try to acquire the RAC in the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a CDMA2000 cell and the *cdma2000-Type* included in the *measObject* is *typeHRPD*:

4> try to acquire the Sector ID in the concerned cell;

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a CDMA2000 cell and the *cdma2000-Type* included in the *measObject* is *type1XRTT*:

4> try to acquire the BASE ID, SID and NID in the concerned cell;

2> else:

3> if a measurement gap configuration is setup; or

3> if the UE does not require measurement gaps to perform the concerned measurements:

4> if *s-Measure* is not configured; or

4> if *s-Measure* is configured and the PCell RSRP, after layer 3 filtering, is lower than this value:

5> perform the corresponding measurements of neighbouring cells on the frequencies and RATs indicated in the concerned *measObject*, applying for neighbouring cells on the primary frequency the time domain measurement resource restriction in accordance with *measSubframePatternConfigNeigh*, if configured in the concerned *measObject*;

4> if the *ue-RxTxTimeDiffPeriodical* is configured in the associated *reportConfig*:

5> perform the UE Rx–Tx time difference measurements on the PCell;

2> perform the evaluation of reporting criteria as specified in 5.5.4;

NOTE 3: The *s-Measure* defines when the UE is required to perform measurements. The UE is however allowed to perform measurements also when the PCell RSRP exceeds *s-Measure*, e.g., to measure cells broadcasting a CSG identity following use of the autonomous search function as defined in TS 36.304 [4].

8.3.1.28.3 Test description

8.3.1.28.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 2.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.1.28.3.2 Test procedure sequence

Table 8.3.1.28.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.1.28.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 2	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	-91	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy exit condition for event A3 (M2 < M1).
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-79	The power level values are such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M2 > M1). Serving Pattern (*measSubframePatternPCell)* is the serving cell's ABS.

Table 8.3.1.28.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to setup intra frequency measurement.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1 to confirm the setup of intra frequency measurement.	-->	*RRCConnectionReconfigurationComplete*	1	P
3	The SS changes Cell 1 and Cell 2 parameters according to the row "T1" in table 8.3.1.28.3.2-1.	-	-	-	-
4	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 to report event A3 with the measured expected RSRP and RSRQ values for Cell 2?	-->	*MeasurementReport*	2	P
5	Check: Does the UE transmit RSRP and RSRQ measurements in serving cell measurement restriction pattern?	-	-	-	-

8.3.1.28.3.3 Specific message contents

Table 8.3.1.28.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.1.28.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition PCell-PATTERN

Table 8.3.1.28.3.3-2: *MeasConfig* (step 1, Table 8.3.1.28.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-1 with condition eICIC			
Information Element	**Value/remark**	**Comment**	**Condition**
measConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC		
}			
reportConfigToAddModList::= SEQUENCE {	ReportConfigToAddModList_DEFAULT		
}			
measIdToAddModList ::= SEQUENCE {	MeasIdToAddModList_DEFAULT		
}			
}			

8.3.2 Inter-RAT measurements

8.3.2.1 Measurement configuration control and reporting / Inter-RAT measurements / Event B2 / Measurement of GERAN cells

8.3.2.1.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for GERAN cell and not detected entering condition for the event
B2 is met }
ensure that {
  when { UE detects entering condition for the event B2 is not met }
    then { UE does not transmit any MeasurementReport }
           }
```

(2)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for GERAN cell and not detected entering condition for the event
B2 is met }
ensure that {
  when { UE detects entering condition for the event B2 is met }
    then { UE transmits a MeasurementReport }
           }
```

(3)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for GERAN cell and detected entering condition for the event B2
is met }
ensure that {
  when { UE detects leaving condition for the event B2 is met }
    then { UE does not transmit any MeasurementReport }
           }
```

8.3.2.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.5.4.1, 5.5.4.8 and 5.5.5.

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

…

2> else:

…

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the *VarMeasConfig* for this *measId*;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

…

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

NOTE 3: If the UE is configured with DRX, the UE may delay the measurement reporting for event triggered and periodical triggered measurements until the Active Time, which is defined in TS 36.321 [6].

[TS 36.331, clause 5.5.4.8]

The UE shall:

1> for UTRA and CDMA2000, only trigger the event for cells included in the corresponding measurement object;

1> consider the entering condition for this event to be satisfied when both condition B2-1 and condition B2-2, as specified below, are fulfilled;

1> consider the leaving condition for this event to be satisfied when condition B2-3 or condition B2-4, i.e. at least one of the two, as specified below, is fulfilled;

Inequality B2-1 (Entering condition 1)

$Ms + Hys < Thresh1$

Inequality B2-2 (Entering condition 2)

$Mn + Ofn - Hys > Thresh2$

Inequality B2-3 (Leaving condition 1)

$Ms - Hys > Thresh1$

Inequality B2-4 (Leaving condition 2)

$Mn + Ofn + Hys < Thresh2$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any offsets.

Mn is the measurement result of the inter-RAT neighbour cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the inter-RAT neighbour cell (i.e. *offsetFreq* as defined within the *measObject* corresponding to the frequency of the inter-RAT neighbour cell).

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigInterRAT* for this event).

Thresh1 is the threshold parameter for this event (i.e. b2-*Threshold1* as defined within *reportConfigInterRAT* for this event).

Thresh2 is the threshold parameter for this event (i.e. *b2-Threshold2* as defined within *reportConfigInterRAT* for this event).

Ms is expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Mn is expressed in dBm or dB, depending on the measurement quantity of the inter-RAT neighbour cell.

Ofn, Hys are expressed in dB.

Thresh1 is expressed in the same unit as ***Ms***.

Thresh2 is expressed in the same unit as ***Mn***.

[TS 36.331, clause 5.5.5]

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultsNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultsNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of decreasing quantity, i.e. the best cell is included first;

…

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

…

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.2.1.3 Test description

8.3.2.1.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 24.
- System information combination 5 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.2.1.3.2 Test procedure sequence

Table 8.3.2.1.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.2.1.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 24	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-60	-	The power level values are such that entering conditions for event B2 are not satisfied.
	RSSI	dBm	-	-85	
T1	Cell-specific RS EPRE	dBm/15kHz	-80	-	The power level values are such that entering conditions for event B2 are satisfied.
	RSSI	dBm	-	-65	
T2	Cell-specific RS EPRE	dBm/15kHz	-60	-	The power level values are such that leaving conditions for event B2 are satisfied.
	RSSI	dBm	-	-85	

Table 8.3.2.1.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup inter RAT measurement on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the setup of inter RAT measurement on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE transmit a *MeasurementReport* message to report the event B2 during the next 10s?	-->	*MeasurementReport*	1	F
4	The SS changes Cell 1 and Cell 24 parameters according to the row "T1" in table 8.3.2.1.3.2-1.	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message to report the event B2 for Cell 24?	-->	*MeasurementReport*	2	P
6	The SS changes Cell 1 and Cell 24 parameters according to the row "T2" in table 8.3.2.1.3.2-1.	-	-	-	-
7	Wait and ignore *MeasurementReport* messages for 15 s to allow change of power levels for Cells 1 and Cell 24.	-	-	-	-
8	Check: Does the UE transmit a *MeasurementReport* message to report the event B2 during the next 10s?	-->	*MeasurementReport*	3	F
9	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicate that the UE is in E-UTRA RRC_CONNECTED state on Cell 1?	-	-	1, 2, 3	-

8.3.2.1.3.3 Specific message contents

Table 8.3.2.1.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.2.1.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.2.1.3.3-2: *MeasConfig* (Table 8.3.2.1.3.3-1)

Derivation Path: 36.508, Table 4.6.6-1, condition GERAN			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f11		
measObject[2]	MeasObjectGERAN-GENERIC(f11)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-B2-GERAN		
reportConfig[1]	ReportConfigInterRAT-B2-GERAN(-69, -79)		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f11		
reportConfigId[1]	IdReportConfig-B2-GERAN		
}			
quantityConfig SEQUENCE {			
quantityConfigGERAN SEQUENCE {			
measQuantityGERAN	rssi		
filterCoefficient	fc0		
}			
}			
}			

Table 8.3.2.1.3.3-2A: *ReportConfigInterRAT-B2-GERAN* (Table 8.3.2.1.3.3-2)

Derivation path: 36.508, Table 4.6.6-7E ReportConfigInterRAT-B2-GERAN(-69, -79)			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B2-GERAN ::= SEQUENCE {			
reportAmount	infinity		
}			

Table 8.3.2.1.3.3-3: *MeasurementReport* (step 5, Table 8.3.2.1.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultsNeighCells CHOICE {			
measResultListGERAN SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
carrierFreq[1] SEQUENCE {			
arfcn	Not checked		
bandIndicator	Not checked		
}			
physCellId[1]	PhysicalCellIdentity of Cell 24		
cgi-info[1]	Not present		
measResult[1] SEQUENCE {			
rssi	(0..63)		
}			
}			
}			
}			
}			
}			
}			
}			

8.3.2.2 Measurement configuration control and reporting / Inter-RAT measurements / Periodic reporting / Measurement of GERAN cells

8.3.2.2.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for GERAN cell }
ensure that {
  when { The UE receives reference signal power for cells on the GERAN frequencies where
measurements are configured }
    then { UE sends MeasurementReport message at regular intervals for these GERAN cells }
            }
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and a MeasurementReport message for a configured periodic
measurement reporting of GERAN cells on a configured frequency were sent }
ensure that {
  when { A previously reported cell become unavailable and the UE receives reference signal power on
a reported GERAN frequency for a cell which was previously not reported }
    then { UE sends MeasurementReport message at regular intervals for the available GERAN cells }
            }
```

(3)

```
with { UE in E-UTRA RRC_CONNECTED state and periodic measurement reporting of GERAN cells ongoing }
ensure that {
  when { The UE receives a RRCConnectionReconfiguration message removing the measId of periodic
reporting of GERAN cells }
    then { UE stops sending MeasurementReport message for GERAN cells }
```

}

8.3.2.2.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.5.3, 5.5.2.2, 5.5.4.1 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

…

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

[TS 36.331, clause 5.5.2.2]

The UE shall:

1> for each *measId* included in the received *measIdToRemoveList* that is part of the current UE configuration in *varMeasConfig*:

2> remove the entry with the matching *measId* from the *measIdList* within the *VarMeasConfig*;

2> remove the measurement reporting entry for this *measId* from the *VarMeasReportList*, if included;

2> stop the periodical reporting timer or timer T321, whichever one is running, and reset the associated information (e.g. *timeToTrigger*) for this *measId*;

NOTE: The UE does not consider the message as erroneous if the *measIdToRemoveList* includes any *measId* value that is not part of the current UE configuration.

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

…

2> else:

…

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the *VarMeasConfig* for this *measId*;

…

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

…

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

NOTE 3: If the UE is configured with DRX, the UE may delay the measurement reporting for event triggered and periodical triggered measurements until the Active Time, which is defined in TS 36.321 [6].

[TS 36.331, clause 5.5.5]

The purpose of this procedure is to transfer measurement results from the UE to E-UTRAN.

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

...

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of decreasing quantity, i.e. the best cell is included first;

...

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

1> else:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasReportList* for this *measId*;

3> remove this *measId* from the *measIdList* within *VarMeasConfig*;

...

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.2.2.3 Test description

8.3.2.2.3.1 Pre-test conditions

System Simulator:

- Cell 3, Cell 25 and Cell 26.
- System information combination 5 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 3 according to [18].

8.3.2.2.3.2 Test procedure sequence

Table 8.3.2.2.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.2.2.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 3	Cell 25	Cell 26	Remark
T0	Cell-specific RS EPRE	dBm/15k Hz	-60	-	-	The power level values are such that camping on Cell 3 is guarantee.
	RSSI	dBm	-	Off	Off	
T1	Cell-specific RS EPRE	dBm/15k Hz	-60	-	-	The power level values are such that Cell 25 is satisfied for periodic reporting.
	RSSI	dBm	-	-70	Off	
T2	Cell-specific RS EPRE	dBm/15k Hz	-60	-	-	The power level values are such that Cell 26 is satisfied for periodic reporting and Cell 25 become unavailable.
	RSSI	dBm	-	Off	-70	

Table 8.3.2.2.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup inter-RAT measurement.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the setup of inter-RAT measurement.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS power "On" Cell 25 according to the row "T1" in table 8.3.2.2.3.2-1.	-	-	-	-
4	Wait and ignore *MeasurementReport* messages for 8s to allow power "On" for Cell 25.	-	-	-	-
-	EXCEPTION: In parallel to events described in steps 5 to 6 the steps specified in table 8.3.2.2.3.2-3 shall take place	-	-	-	-
5	Wait for 30 s to ensure that the UE performs a inter-RAT periodical reporting.	-	-	-	-
6	The SS power "Off" Cell 25 and power "On" Cell 26 according to the row "T2" in table 8.3.2.2.3.2-1.	-	-	-	-
7	Wait and ignore *MeasurementReport* messages for 8s to allow power "Off" and power "On" for Cell 25 and Cell 26 respectively.	-	-	-	-
-	EXCEPTION: In parallel to events described in steps 8 to 9 the steps specified in table 8.3.2.2.3.2-4 shall take place	-	-	-	-
8	Wait for 30 s to ensure that the UE performs a inter-RAT periodical reporting.	-	-	-	-
9	The SS transmits an *RRCConnectionReconfiguration* message to remove inter-RAT measurement.	<--	*RRCConnectionReconfiguration*	-	-
10	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the remove of inter-RAT measurement.	-->	*RRCConnectionReconfigurationComplete*	-	-
11	Check: Does the UE attempt to transmit an uplink message for the next 10s?	-	-	3	F

Table 8.3.2.2.3.2-3: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: After the 1st message is received, step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical reporting for Cell 25?	-->	*MeasurementReport*	1	P

Table 8.3.2.2.3.2-4: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: After the 1st message is received, step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical reporting for Cell 26(NOTE1)?	-->	*MeasurementReport*	1, 2	P

NOTE1: Cell 25 may be included in the *MeasurementReport* due to UE averages power levels over a period of time.

8.3.2.2.3.3 Specific message contents

Table 8.3.2.2.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.2.2.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.2.2.3.3-2: *MeasConfig* (Table 8.3.2.2.3.3-1)

Derivation Path: 36.508, Table 4.6.6-1, condition GERAN			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f2		
measObject[1]	MeasObjectEUTRA-GENERIC(f2)		
measObjectId[2]	IdMeasObject-f12		
measObject[2]	MeasObjectGERAN-GENERIC(f12)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfigInterRAT - PERIODICAL		
reportConfig[1]	ReportConfigInterRAT-PERIODICAL		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f12		
reportConfigId[1]	IdReportConfigInterRAT - PERIODICAL		
}			
}			

Table 8.3.2.2.3.3-3: *MeasurementReport* (step 1, Table 8.3.2.2.3.2-3)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultsNeighCells CHOICE {			
measResultListGERAN SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
carrierFreq[1] SEQUENCE {			
arfcn	Not checked		
bandIndicator	Not checked		
}			
physCellId[1]	PhysicalCellIdentity of Cell 25		
cgi-info[1]	Not present		
measResult[1] SEQUENCE {			
rssi	(0..63)		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.2.2.3.3-4: *MeasurementReport* (step 1, Table 8.3.2.2.3.2-4)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultsNeighCells CHOICE {			
measResultListGERAN SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
carrierFreq[1] SEQUENCE {			
arfcn	Not checked		
bandIndicator	Not checked		
}			
physCellId[1]	PhysicalCellIdentity of Cell 26		
cgi-info[1]	Not present		
measResult[1] SEQUENCE {			
rssi	(0..63)		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.2.2.3.3-5: *RRCConnectionReconfiguration* (step 9, Table 8.3.2.2.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.2.2.3.3-6: *MeasConfig* (Table 8.3.2.2.3.3-5)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measIdToRemoveList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
}			
}			

8.3.2.3 Measurement configuration control and reporting / Inter-RAT measurements / Event B2 / Measurement of UTRAN cells

8.3.2.3.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for UTRA cell and not detected entering condition for the event
B2 is met }
ensure that {
  when { UE detects entering condition for the event B2 is not met }
    then { UE does not transmit any MeasurementReport }
            }
```

(2)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for UTRA cell and not detected entering condition for the event
B2 is met }
ensure that {
  when { UE detects entering condition for the event B2 is met }
    then { UE transmits a MeasurementReport }
           }
```

(3)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for UTRA cell and detected entering condition for the event B2
is met }
ensure that {
  when { UE detects leaving condition for the event B2 is met }
    then { UE does not transmit any MeasurementReport }
           }
```

8.3.2.3.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.5.4.1, 5.5.4.8 and 5.5.5.

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the corresponding *reportConfig* includes a purpose set to '*reportStrongestCellsForSON*':

...

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

...

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the for this *measId*;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* :(a first cell triggers the event)

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering

taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

...

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *purpose is* included and set to '*reportCGI*' and if the UE acquired the information needed to set all fields of *cellGlobalId* for the requested cell:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> stop timer T321;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> upon expiry of the T321 for this *measId*:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

...

[TS 36.331, clause 5.5.4.8]

The UE shall:

1> for UTRA and CDMA2000, only trigger the event for cells included in the corresponding measurement object;

1> consider the entering condition for this event to be satisfied when both condition B2-1 and condition B2-2, as specified below, are fulfilled;

1> consider the leaving condition for this event to be satisfied when condition B2-3 or condition B2-4, i.e. at least one of the two, as specified below, is fulfilled;

Inequality B2-1 (Entering condition 1)

$Ms + Hys < Thresh1$ Inequality B2-2 (Entering condition 2)

$$Mn + Ofn - Hys > Thresh2$$

Inequality B2-3 (Leaving condition 1)

$$Ms - Hys > Thresh1$$

Inequality B2-4 (Leaving condition 2)

$$Mn + Ofn + Hys < Thresh2$$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any offsets.

Mn is the measurement result of the inter-RAT neighbour cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the inter-RAT neighbour cell (i.e. *offsetFreq* as defined within the *measObject* corresponding to the frequency of the inter-RAT neighbour cell)

Hys is the hysteresis parameter for this event (i.e. hysteresis as defined within *reportConfigInterRAT* for this event)

Thresh1 is the threshold parameter for this event (i.e. b2-Threshold1 as defined within *reportConfigInterRAT* for this event)

Thresh2 is the threshold parameter for this event (i.e. b2-Threshold2 as defined within *reportConfigInterRAT* for this event)

Ms is expressed in dBm in case of RSRP, or in dB in case of RSRQ

Mn is expressed in dBm or dB, depending on the measurement quantity of the inter-RAT neighbour cell

Ofn, Hys are expressed in dB

Thresh1 is expressed in the same unit as ***Ms***

Thresh2 is expressed in the same unit as ***Mn***

[TS 36.331, clause 5.5.5]

The purpose of this procedure is to transfer measurement results from the UE to E-UTRAN.

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*

3> else:

4> include the applicable calls for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells* include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

...

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of decreasing quantity, i.e. the best cell is included first;

...

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

1> else:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasReportList* for this *measId*;

3> remove this *measId* from the *measIdList* within *VarMeasConfig*;

1> if the measured results are for CDMA2000 HRPD:

2> set the *preRegistrationStatusHRPD* to the UE's CDMA2000 upper layer's HRPD *preRegistrationStatus*;

1> if the measured results are for CDMA2000 1xRTT:

2> set the *preRegistrationStatusHRPD* to '*FALSE*';

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.2.3.3 Test description

8.3.2.3.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 7.

- System information combination 4 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.2.3.3.2 Test procedure sequence

Table 8.3.2.3.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.2.3.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 7	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-60	-	The power level values are such that entering conditions for event B2 are not satisfied.
	CPICH Ec= (UTRA FDD)	dBm/3.84MHz	-	-88	
	PCCPCH Ec (UTRA LCR TDD)	dBm/1.28 MHz	-	-88	
T1	Cell-specific RS EPRE	dBm/15kHz	-84	-	The power level values are such that entering conditions for event B2 are satisfied.
	CPICH Ec= (UTRA FDD)	dBm/3.84MHz	-	-64	
	PCCPCH Ec (UTRA LCR TDD)	dBm/1.28 MHz	-	-64	
T2	Cell-specific RS EPRE	dBm/15kHz	-60	-	The power level values are such that leaving conditions for event B2 are satisfied.
	CPICH Ec= (UTRA FDD)	dBm/3.84MHz	-	-88	
	PCCPCH Ec (UTRA LCR TDD)	dBm/1.28 MHz	-	-88	

Table 8.3.2.3.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup inter RAT measurement on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the setup of inter RAT measurement on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 to report the event B2 during the next 10s?	-->	*MeasurementReport*	1	F
4	The SS changes Cell 1 and Cell 7 parameters according to the row "T1" in table 8.3.2.3.3.2-1.	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message to report the event B2 for Cell 7?	-->	*MeasurementReport*	2	P
6	The SS changes Cell 1 and Cell 7 parameters according to the row "T2" in table 8.3.2.3.3.2-1.	-	-	-	-
6A	Wait and ignore *MeasurementReport* messages for 15 s to allow change of power levels and UE measurement for Cells 1 and Cell 7.	-	-	-	-
7	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 to report the event B2 during the next 10s?	-->	*MeasurementReport*	3	F
8	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicate that the UE is in E-UTRA RRC_CONNECTED state on Cell 1?	-	-	1,2, 3	-

8.3.2.3.3.3 Specific message contents

Table 8.3.2.3.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.2.3.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.2.3.3.3-2: *MeasConfig* (Table 8.3.2.3.3.3-1)

Derivation Path: 36.508, Table 4.6.6-1, condition UTRAN			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f8		
measObject[2]	MeasObjectUTRA-f8		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-B2-UTRA		
reportConfig[1]	ReportConfigInterRAT-B2-UTRA(-72, -76)		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f8		
reportConfigId[1]	IdReportConfig-B2-UTRA		
}			
}			

Table 8.3.2.3.3.3-2A: *QuantityConfig* (Table 8.3.2.3.3.3-1)

Derivation Path: 36.508, Table 4.6.6-3A, condition UTRAN			
Information Element	**Value/remark**	**Comment**	**Condition**
QuantityConfig SEQUENCE {			
quantityConfigUTRA SEQUENCE {			
measQuantityUTRA-FDD	cpich-RSCP		UTRA-FDD
measQuantityUTRA-TDD	pccpch-RSCP		UTRA-TDD
filterCoefficient	fc0		
}			
}			

Condition	Explanation
UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

Table 8.3.2.3.3.3-2B MeasObjectUTRA-f8 (Table 8.3.2.3.3.3-2)

Derivation path: 36.508 table 4.6.6-3 MeasObjectUTRA-GENERIC(f8)			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasObjectUTRA-GENERIC(f8) ::= SEQUENCE {			
carrierFreq	UTRA DL carrier frequency of the cell 7		
cellsToAddModList CHOICE {			
cellsToAddModListUTRA-FDD ::= SEQUENCE (SIZE (1.. maxCellMeas)) OF SEQUENCE {			UTRA-FDD
cellIndex [1]	1		
physCellId [1]	physicalCellIdentity – Cell 7		
}			
cellsToAddModListUTRA-TDD ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {			UTRA-TDD
cellIndex [1]	1		
physCellId [1]	physicalCellIdentity – Cell 7		
}			
}			
}			

Condition	Explanation
UTRA-FDD	UTRA-FDD cell environment
UTRA-TDD	UTRA-TDD cell environment

Table 8.3.2.3.3.3-3: *ReportConfigInterRAT-B2-UTRA* (Table 8.3.2.3.3.3-2)

Derivation path: 36.508, Table 4.6.6-8 ReportConfigInterRAT-B2-UTRA(-72, -76)			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B2-UTRA ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
timeToTrigger	ms1024		
}			
}			
reportAmount	infinity		
}			

Table 8.3.2.3.3.3-4: *MeasurementReport* (step 5, Table 8.3.2.3.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 7		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
utra-RSCP	(-5..91)		
}			
}			
}			
}			
}			
}			
}			
}			

Condition	Explanation
UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

8.3.2.3a Measurement configuration control and reporting / Inter-RAT measurements / Event B2 / Measurement of UTRAN cells / RSRQ based measurements

8.3.2.3a.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for UTRA cell, configured b2-Threshold1 set to threshold-RSRQ
and not detected entering condition for the event B2 is met }
ensure that {
  when { UE detects entering condition for the event B2 is not met }
    then { UE does not transmit any MeasurementReport }
            }
```

(2)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for UTRA cell, configured b2-Threshold1 set to threshold-RSRQ
and not detected entering condition for the event B2 is met }
ensure that {
  when { UE detects entering condition for the event B2 is met }
    then { UE transmits a MeasurementReport }
            }
```

(3)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for UTRA cell, configured b2-Threshold1 set to threshold-RSRQ
and detected entering condition for the event B2 is met }
ensure that {
```

```
when { UE detects leaving condition for the event B2 is met }
  then { UE does not transmit any MeasurementReport }
          }
```

8.3.2.3a.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.5.4.1, 5.5.4.8 and 5.5.5.

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the corresponding *reportConfig* includes a purpose set to '*reportStrongestCellsForSON*':

...

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> if the *ue-RxTxTimeDiffPeriodical*, *eventA1* or *eventA2* is configured in the corresponding *reportConfig*:

5> consider only the serving cell to be applicable;

4> else:

5> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

NOTE 0: The UE may also consider a neighbouring cell on the associated UTRA frequency to be applicable when the concerned cell is included in the *csg-allowedReportingCells* within the *VarMeasConfig* for this *measId*, if configured in the corresponding *measObjectUTRA* (i.e. the cell is included in the range of physical cell identities for which reporting is allowed).

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the *VarMeasConfig* for this *measId*;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

...

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *purpose is* included and set to '*reportCGI*' and if the UE acquired the information needed to set all fields of *cgi-Info* for the requested cell:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> stop timer T321;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> upon expiry of the T321 for this *measId*:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

[TS 36.331, clause 5.5.4.8]

The UE shall:

1> for UTRA and CDMA2000, only trigger the event for cells included in the corresponding measurement object;

1> consider the entering condition for this event to be satisfied when both condition B2-1 and condition B2-2, as specified below, are fulfilled;

1> consider the leaving condition for this event to be satisfied when condition B2-3 or condition B2-4, i.e. at least one of the two, as specified below, is fulfilled;

Inequality B2-1 (Entering condition 1):

$$Ms + Hys < Thresh1$$

Inequality B2-2 (Entering condition 2):

$$Mn + Ofn - Hys > Thresh2$$

Inequality B2-3 (Leaving condition 1):

$$Ms - Hys > Thresh1$$

Inequality B2-4 (Leaving condition 2):

$$Mn + Ofn + Hys < Thresh2$$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any offsets.

Mn is the measurement result of the inter-RAT neighbour cell, not taking into account any offsets. For CDMA2000 measurement result, *pilotStrength* is divided by -2.

Ofn is the frequency specific offset of the frequency of the inter-RAT neighbour cell (i.e. *offsetFreq* as defined within the *measObject* corresponding to the frequency of the inter-RAT neighbour cell).

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigInterRAT* for this event).

Thresh1 is the threshold parameter for this event (i.e. b2-*Threshold1* as defined within *reportConfigInterRAT* for this event).

Thresh2 is the threshold parameter for this event (i.e. *b2-Threshold2* as defined within *reportConfigInterRAT* for this event). For CDMA2000, *b2-Threshold2* is divided by -2.

Ms is expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Mn is expressed in dBm or dB, depending on the measurement quantity of the inter-RAT neighbour cell.

Ofn, Hys are expressed in dB.

Thresh1 is expressed in the same unit as ***Ms***.

Thresh2 is expressed in the same unit as ***Mn***.

[TS 36.331, clause 5.5.5]

The purpose of this procedure is to transfer measurement results from the UE to E-UTRAN.

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

...

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of either decreasing quantity for UTRA and GERAN or increasing quantity for CDMA2000 *pilotStrength*, i.e. the best cell is included first;

...

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

1> else:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasReportList* for this *measId*;

3> remove this *measId* from the *measIdList* within *VarMeasConfig*;

1> if the measured results are for CDMA2000 HRPD:

2> set the *preRegistrationStatusHRPD* to the UE's CDMA2000 upper layer's HRPD *preRegistrationStatus*;

1> if the measured results are for CDMA2000 1xRTT:

2> set the *preRegistrationStatusHRPD* to '*FALSE*';

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.2.3a.3 Test description

8.3.2.3a.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 7
- System information combination 4 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cell.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.2.3a.3.2 Test procedure sequence

Table 8.3.2.3a.3.2-1 illustrates the downlink power levels to be applied for Cell 1and Cell 7 at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while rows marked "T1"and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.2.3a.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 7	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-60	-	The power level values are assigned such that entering conditions for event B2 are not satisfied.
	RSRQ	dB	-4.15	-	
	CPICH Ec	dBm/3.84MHz	-	-93	
	CPICH_Ec/Io (Note 1)	dB	-	-18.13	
	Noc	dBm/15kHz	-73	-	
	Ioc	dBm/3.84MHz	-	-75	
T1	Cell-specific RS EPRE	dBm/15kHz	-75	-	The power level values are assigned such that entering conditions for event B2 are satisfied.
	RSRQ	dB	-13.23	-	
	CPICH Ec	dBm/3.84MHz	-	-65	
	CPICH_Ec/Io (Note 1)	dB	-	-3.11	
T2	Cell-specific RS EPRE	dBm/15kHz	-60	-	The power level values are assigned such that leaving conditions for event B2 are satisfied.
	RSRQ	dB	4.15-	-	
	CPICH Ec	dBm/3.84MHz	-	-65	
	CPICH_Ec/Io (Note 1)	dB	-	-3.11	

NOTE 1: This parameter is not directly settable, but are derived by calculation from the other parameters set by the SS.

Table 8.3.2.3a.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup inter RAT measurement on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the setup of inter RAT measurement on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 to report the event B2 during the next 10s?	-->	*MeasurementReport*	1	F
4	The SS changes Cell 1 and Cell 7 parameters according to the row "T1" in table 8.3.2.3a.3.2-1.	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 to report the event B2 for Cell 7?	-->	*MeasurementReport*	2	P
6	The SS changes Cell 1 and Cell 7 parameters according to the row "T2" in table 8.3.2.3a.3.2-1.	-	-	-	-
7	Wait and ignore *MeasurementReport* messages on Cell 1 for 5 s to allow change of power levels for Cell 1 and Cell 7.	-	-	-	-
8	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 to report the event B2 during the next 10s?	-->	*MeasurementReport*	3	F
9	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicate that the UE is in E-UTRA RRC_CONNECTED state on Cell 1?	-	-	3	-

8.3.2.3a.3.3 Specific message contents

Table 8.3.2.3a.3.3-0:S*ystemInformationBlockType3* for Cell 1 (preamble and all steps, Table 8.3.2.3a.3.2-1)

Derivation path: 36.508 table 4.4.3.3-2			
Information Element	**Value/Remark**	**Comment**	**Condition**
SystemInformationBlockType3 ::= SEQUENCE {			
lateNonCriticalExtension {			
s-IntraSearch-v920 SEQUENCE {}	Not present		
s-NonIntraSearch-v920 SEQUENCE {}	Not present		
q-QualMin-r9	-30 dB		
threshServingLowQ-r9	26 dB		
}			
}			

Table 8.3.2.3a.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.2.3a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.2.3a.3.3-2: *MeasConfig* (Table 8.3.2.3a.3.3-1)

Derivation Path: 36.508, Table 4.6.6-1, condition UTRAN			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f8		
measObject[2]	MeasObjectUTRA-f8		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-B2-UTRA		
reportConfig[1]	ReportConfigInterRAT-B2-UTRA-RSRQ(-12)		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f8		
reportConfigId[1]	IdReportConfig-B2-UTRA		
}			
}			

Table 8.3.2.3a.3.3-3: *QuantityConfig* (Table 8.3.2.3a.3.3-2)

Derivation Path: 36.508, Table 4.6.6-3A, condition UTRAN			
Information Element	**Value/remark**	**Comment**	**Condition**
QuantityConfig SEQUENCE {			
quantityConfigUTRA SEQUENCE {			
measQuantityUTRA-FDD	cpich-EcN0		
filterCoefficient	fc0		
}			
}			

Table 8.3.2.3a.3.3-4: MeasObjectUTRA-f8 (Table 8.3.2.3a.3.3-2)

Derivation Path: 36.508, Table 4.6.6-3			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectUTRA ::= SEQUENCE {			
carrierFreq	UTRA DL carrier frequency of the cell 7		
cellsToAddModList CHOICE {			
cellsToAddModListUTRA-FDD SEQUENCE (SIZE (1..maxCellMeas)) OF SEQUENCE {	1 entry		UTRA-FDD
cellIndex[1]	1		
physCellId[1]	physicalCellIdentity - Cell 7		
}			
cellsToAddModListUTRA-TDD SEQUENCE (SIZE (1..maxCellMeas)) OF SEQUENCE {	1 entry		UTRA-TDD
cellIndex[1]	1		
physCellId[1]	physicalCellIdentity - Cell 7		
}			
}			
csg-allowedReportingCells-v930	Not present		
}			

Condition	Explanation
UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

Table 8.3.2.3a.3.3-5: ReportConfigInterRAT-B2-UTRA-RSRQ(UTRA-Thres) (Table 8.3.2.3a.3.3-2)

Derivation Path: 36.508, Table 4.6.6-8			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventB2 SEQUENCE {			
b2-Threshold1 CHOICE{			
threshold-RSRQ	16	-12dB	
}			
}			
}			
hysteresis	0 (0 dB)		
timeToTrigger	ms1024		
}			
}			
reportAmount	infinity		
si-RequestForHO-r9	Not present		
}			
NOTE: UTRA-Thres is used in TS 36.508[18] Table 4.6.6-8.			

Table 8.3.2.3a.3.3-6: *MeasurementReport* (step 5, Table 8.3.2.3a.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 7		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
utra-RSCP	(-5..91)		UTRA-TDD
utra-EcN0	(0..49)		UTRA-FDD
additionalSI-Info-r9	Not present		
}			
}			
}			
measResultForECID-r9	Not present		
}			
}			
}			
}			
}			

Condition	Explanation

UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

8.3.2.4 Measurement configuration control and reporting / Inter-RAT measurements / Periodic reporting / Measurement of UTRAN cells

8.3.2.4.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurement configured for periodic reporting of UTRA
cells }
ensure that {
  when { The UE receives reference signal power for cells on the UTRA frequency where measurements
are configured }
    then { UE sends MeasurementReport message at regular intervals for these UTRA cells }
}
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and a Measurement Report message for a configured periodic
measurement reporting of UTRA cells on a configured frequency were sent }
ensure that {
  when { A previously reported cell become unavailable or the UE receives reference signal power on
a reported UTRA frequency for a cell which was previously not reported }
    then { UE sends MeasurementReport message at regular intervals for the available UTRA cells }
}
```

(3)

```
with { UE in E-UTRA RRC_CONNECTED state and periodic measurement reporting of UTRA cells ongoing}
ensure that {
  when { The UE receives a RRCConnectionReconfiguration message removing the measId of periodic
reporting of UTRA cells }
    then { UE stops sending MeasurementReport message for UTRA cells }
}
```

8.3.2.4.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.2.2, 5.5.4.1 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> If the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the Measurement configuration procedure as specified in 5.5.2;

[TS 36.331, clause 5.5.2.2]

The UE shall:

1> for each *measId* value included in the received *measIdToRemoveList* that is part of the current UE configuration in *varMeasConfig:*

2> remove the entry with the matching *measId* from the *measIdList* within the *VarMeasConfig*;

2> remove the measurement reporting entry for this *measId* from the *VarMeasReportList*, if included;

2> stop the periodical reporting timer or timer T321, whichever one is running, and reset the associated information (e.g. *timeToTrigger*) for this *measId*;

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

…

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

…

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

[TS 36.331, clause 5.5.5]

For the measId for which the measurement reporting procedure was triggered, the UE shall set the *measuredResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultsNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultsNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of decreasing quantity, i.e. the best cell is included first;

1> increment the numberOfReportsSent as defined within the *VarMeasReportList* for this measId by 1;

1> stop the periodical reporting timer, if running;

1> if the numberOfReportsSent as defined within the *VarMeasReportList* for this measId is less than to reportAmount as defined corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of reportInterval as defined within the corresponding *reportConfig* for this measId;

…

1> submit the MEASUREMENT REPORT message to lower layers for transmission, upon which the procedure ends.

8.3.2.4.3 Test description

8.3.2.4.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 5 and Cell 7
- System information combination 4 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) according to [18] on Cell 1.

8.3.2.4.3.2 Test procedure sequence

Table 8.3.2.4.3.2-1 illustrates the downlink power levels to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while rows marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.2.4.3.2-1: Power levels

	Parameter	Unit	Cell 1	Parameter	Unit	Cell 5	Cell 7	Remark
	E-UTRA Cell			UTRA Cells				
T0	Cell-specific RS EPRE	dBm/15kHz	-75	CPICH_Ec (UTRA FDD)	dBm/3.84 MHz	-85	Off	Power levels shall be such that camping on Cell 1 is guaranteed
				PCCPCH_Ec (UTRA LCR TDD)	dBm/1.28 MHz	-85	Off	
T1			-75	CPICH_Ec (UTRA FDD)	dBm/3.84 MHz	-85	-85	
				PCCPCH_Ec (UTRA LCR TDD)	dBm/1.28 MHz	-85	-85	
T2			-75	CPICH_Ec (UTRA FDD)	dBm/3.84 MHz	Off	-85	
				PCCPCH_Ec (UTRA LCR TDD)	dBm/1.28 MHz	Off	-85	

Table 8.3.2.4.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup measurements and periodical reporting for UTRA cells.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
-	EXCEPTION: In parallel to events described in steps 3 to 4 the steps specified in table 8.3.2.4.3.2-3 shall take place				
3	Wait for 30 s to ensure that the UE performs a periodical reporting of UTRA cells.	-	-	1	-
4	The SS sets the cell-specific reference signal levels and switches Cell 7 on according to row "T1" in table 8.3.2.4.3.2-1.	-	-	-	-
5	Wait and ignore *MeasurementReport* messages for 8 s to allow for the switching of cells and UE measurement.	-	-	-	-
-	EXCEPTION: In parallel to events described in steps 6 to 7 the steps specified in table 8.3.2.4.3.2-4 shall take place				
6	Wait for 30 s to ensure that the UE performs a periodical reporting of UTRA cells.	-	-	1, 2	-
7	The SS sets the cell-specific reference signal levels and switches Cell 5 "Off" according to row "T2" in table 8.3.2.4.3.2-1.	-	-	-	-
8	Wait and ignore *MeasurementReport* messages for 8 s to allow for the switching of cells and UE measurement	-	-	-	-
-	EXCEPTION: In parallel to events described in steps 9 to 10 the steps specified in table 8.3.2.4.3.2-5 shall take place				
9	Wait for 30 s to ensure that the UE performs a periodical reporting of UTRA cells.	-	-	1, 2	-
10	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to remove *measId* for periodic reporting.	<--	*RRCConnectionReconfiguration*	-	-
11	The UE transmits an *RRCConnectionReconfigurationComplete* message	-->	*RRCConnectionReconfigurationComplete*	-	-
12	Check: Does the UE attempt to transmit an uplink message for the next 10s?	-	-	3	F

Table 8.3.2.4.3.2-3: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: After the 1st message is received, step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.				
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical reporting for Cell 5?	-->	*MeasurementReport*	1	P

Table 8.3.2.4.3.2-4: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: Step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.				
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical reporting for Cell 5 and Cell 7?	-->	*MeasurementReport*	1, 2	P

Table 8.3.2.4.3.2-5: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: Step 1 shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.				
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical reporting for Cell 7(NOTE1)?	-->	*MeasurementReport*	1, 2	P

NOTE1: Cell 5 may be included in the *MeasurementReport* due to UE averages power levels over a period of time.

8.3.2.4.3.3 Specific message contents

Table 8.3.2.4.3.3-1 *RRCConnectionReconfiguration* (step 1 and step 10, Table 8.3.2.4.3.2-2)

Derivation path: 36.508 table 4.6.1-8 with condition MEAS

Table 8.3.2.4.3.3-2 *MeasConfig* (step 1, Table 8.3.2.4.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1 with condition UTRAN			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f8		
measObject[2]	MeasObjectUTRA-f8	UTRA frequency	
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-PERIODICAL		
reportConfig[1]	ReportConfigInterRAT-PERIODICAL-UTRA		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f8		
reportConfigId[1]	IdReportConfig-PERIODICAL		
}			
quantityConfig SEQUENCE {			
quantityConfigUTRA SEQUENCE {			
measQuantityUTRA-FDD	cpich-RSCP		UTRA-FDD
measQuantityUTRA-TDD	pccpch-RSCP		UTRA-TDD
}			
}			
}			

Condition	Explanation
UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

Table 8.3.2.4.3.3-3 MeasObjectUTRA-f8 (step 1, Table 8.3.2.4.3.2-2)

Derivation path: 36.508 table 4.6.6-3 MeasObjectUTRA-GENERIC(f8)			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasObjectUTRA-GENERIC(f8) ::= SEQUENCE {			
carrierFreq		UTRA DL carrier frequency of Cell 5 and Cell 7	
cellsToAddModList CHOICE {			
cellsToAddModListUTRA-FDD ::= SEQUENCE (SIZE (1.. maxCellMeas)) OF SEQUENCE {			UTRA-FDD
cellIndex [1]	1		
physCellId [1]	physicalCellIdentity – Cell 5		
cellIndex [2]	2		
physCellId [2]	physicalCellIdentity – Cell 7		
}			
cellsToAddModListUTRA-TDD ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {			UTRA-TDD
cellIndex [1]	1		
physCellId [1]	physicalCellIdentity – Cell 5		
cellIndex [2]	2		
physCellId [2]	physicalCellIdentity – Cell 7		
}			
}			
}			

Condition	Explanation
UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

Table 8.3.2.4.3.3-4 ReportConfigInterRAT-PERIODICAL-UTRA (step 1, Table 8.3.2.4.3.2-2)

Derivation path: 36.508 table 4.6.6-9 ReportConfigInterRAT-PERIODICAL			
Information Element	**Value/Remark**	**Comment**	**Condition**
ReportConfigInterRAT-PERIODICAL-UTRA ::= SEQUENCE {			
maxReportCells	2	Report Cell 5 and Cell 7	
}			

Table 8.3.2.4.3.3-5: *MeasConfig* (step 10, Table 8.3.2.4.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measIdToRemoveList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
}			
}			

Table 8.3.2.4.3.3-6: *MeasurementReport* (step 1, Table 8.3.2.4.3.2-3)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId[1] CHOICE {			
fdd	physicalCellIdentity – Cell 5	Report Cell 5	UTRA-FDD
tdd	physicalCellIdentity – Cell 5	Report Cell 5	UTRA-TDD
}			
measResult [1] ::= SEQUENCE {			
utra-RSCP	(-5..91)		
}			
}			
}			
}			
}			
}			

Condition	Explanation
UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

Table 8.3.2.4.3.3-7: *MeasurementReport* (step 1, Table 8.3.2.4.3.2-4)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId[1] CHOICE {			
fdd	physicalCellIdentity – Cell 5	Report Cell 5	UTRA-FDD
tdd	physicalCellIdentity – Cell 5	Report Cell 5	UTRA-TDD
}			
measResult [1] ::= SEQUENCE {			
utra-RSCP	(-5..91)		
}			
physCellId[2] CHOICE {			
fdd	physicalCellIdentity – Cell 7	Report Cell 7	UTRA-FDD
tdd	physicalCellIdentity – Cell 7	Report Cell 7	UTRA-TDD
}			
measResult [2] ::= SEQUENCE {			
utra-RSCP	(-5..91)		
}			
}			
}			
}			
}			
}			
}			

Condition	Explanation
UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

Table 8.3.2.4.3.3-8: *MeasurementReport* (step 1, Table 8.3.2.4.3.2-5)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {			
physCellId[1] CHOICE {			
fdd	physicalCellIdentity – Cell 7	Report Cell 7	UTRA-FDD
tdd	physicalCellIdentity – Cell 7	Report Cell 7	UTRA-TDD
}			
measResult [1] ::= SEQUENCE {			
utra-RSCP	(-5..91)		
}			
}			
}			
}			
}			
}			

Condition	Explanation
UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

8.3.2.5 Measurement configuration control and reporting / Inter-RAT measurements / Periodic reporting / Measurements of E-UTRAN, UTRAN and GERAN cells

8.3.2.5.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for UTRAN and GERAN cells }
ensure that {
  when { The UE receives reference signal power for cells on either UTRAN or GERAN frequency where
measurements are configured }
    then { UE sends MeasurementReport message at regular intervals for UTRAN or GERAN cell }
            }
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and a MeasurementReport message for a configured periodic
measurement reporting of UTRAN or GERAN cell on a configured frequency was sent }
ensure that {
  when { A previously reported cell become unavailable and the UE receives reference signal power on
a reported UTRAN or GERAN frequency for a cell which was previously not reported }
    then { UE sends MeasurementReport message at regular intervals for the available UTRAN or GERAN
cell }
            }
```

(3)

```
with { UE in E-UTRA RRC_CONNECTED state and periodic measurement reporting of UTRAN or GERAN cells
ongoing }
ensure that {
when { The UE receives reference signal power on a reported UTRAN or GERAN frequency for a cell
which was previously not reported }
    then { UE sends MeasurementReport messages at regular intervals for the available UTRAN and
GERAN cells }
            }
```

(4)

```
with { UE in E-UTRA RRC_CONNECTED state and periodic measurement reporting of UTRAN and GERAN cells
ongoing }
ensure that {
  when { The UE receives a RRCConnectionReconfiguration message removing the measId of periodic
reporting of UTRAN and GERAN cells }
    then { UE stops sending MeasurementReport message for UTRAN and GERAN cells }
            }
```

8.3.2.5.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.5.3, 5.5.2.2, 5.5.4.1 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

…

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

3> perform the measurement configuration procedure as specified in 5.5.2;

[TS 36.331, clause 5.5.2.2]

The UE shall:

1> for each *measId* included in the received *measIdToRemoveList* that is part of the current UE configuration in *varMeasConfig*:

2> remove the entry with the matching *measId* from the *measIdList* within the *VarMeasConfig*;

2> remove the measurement reporting entry for this *measId* from the *VarMeasReportList*, if included;

2> stop the periodical reporting timer or timer T321, whichever one is running, and reset the associated information (e.g. *timeToTrigger*) for this *measId*;

NOTE: The UE does not consider the message as erroneous if the *measIdToRemoveList* includes any *measId* value that is not part of the current UE configuration.

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

...

2> else:

...

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the *VarMeasConfig* for this *measId*;

...

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

...

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

NOTE 3: If the UE is configured with DRX, the UE may delay the measurement reporting for event triggered and periodical triggered measurements until the Active Time, which is defined in TS 36.321 [6].

[TS 36.331, clause 5.5.5]

The purpose of this procedure is to transfer measurement results from the UE to E-UTRAN.

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

...

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of decreasing quantity, i.e. the best cell is included first;

...

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

1> else:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasReportList* for this *measId*;

3> remove this *measId* from the *measIdList* within *VarMeasConfig*;

...

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.2.5.3 Test description

8.3.2.5.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 5 and Cell 24.
- System information combination 10 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.2.5.3.2 Test procedure sequence

Table 8.3.2.5.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.2.5.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 5	Cell 24	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-60	-	-	The power level values are such that camping on Cell 1 is guarantee.
	CPICH_Ec (UTRA FDD)	dB	-	Off	-	
	PCCPCH_Ec (UTRA LCR TDD)	dBm/1.28 MHz	-	Off	-	
	RSSI	dBm	-	-	Off	
T1	Cell-specific RS EPRE	dBm/15kHz	-60	-	-	The power level values are such that Cell 5 is satisfied for periodic reporting.
	CPICH_Ec (UTRA FDD)	dB	-	-85	-	
	PCCPCH_Ec (UTRA LCR TDD)	dBm/1.28 MHz	-	-85	-	
	RSSI	dBm	-	-	Off	
T2	Cell-specific RS EPRE	dBm/15kHz	-60	-	-	The power level values are such that Cell 24 is satisfied for periodic reporting and Cell 5 become unavailable.
	CPICH_Ec (UTRA FDD)	dB	-	Off	-	
	PCCPCH_Ec (UTRA LCR TDD)	dBm/1.28 MHz	-	Off	-	
	RSSI	dBm	-	-	-70	
T3	Cell-specific RS EPRE	dBm/15kHz	-60	-	-	The power level values are such that Cell 5 and Cell 24 are satisfied for periodic reporting.
	CPICH_Ec (UTRA FDD)	dB	-	-85	-	
	PCCPCH_Ec (UTRA LCR TDD)	dBm/1.28 MHz	-	-85	-	
	RSSI	dBm	-	-	-70	

Table 8.3.2.5.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup inter-RAT measurement.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the setup of inter-RAT measurement.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS power "On" Cell 5 according to the row "T1" in table 8.3.2.5.3.2-1.	-	-	-	-
4	Wait and ignore *MeasurementReport* messages for 15s to allow power "On" for Cell 5 and to allow UE to measure the neighbouring cells.	-	-	-	-
-	EXCEPTION: In parallel to events described in step 5 the steps specified in table 8.3.2.5.3.2-3 shall take place	-	-	-	-
5	Wait for 30 s to ensure that the UE performs a inter-RAT periodical reporting.	-	-	-	-
6	The SS power "Off" Cell 5 and power "On" Cell 24 according to the row "T2" in table 8.3.2.5.3.2-1.	-	-	-	-
7	Wait and ignore *MeasurementReport* messages for 15s to allow power "Off" and power "On" for Cell 5 and Cell 24 respectively and to allow UE to measure the neighbouring cells.	-	-	-	-
-	EXCEPTION: In parallel to events described in step 8 the steps specified in table 8.3.2.5.3.2-4 shall take place	-	-	-	-
8	Wait for 30 s to ensure that the UE performs a inter-RAT periodical reporting.	-	-	-	-
9	The SS power "On" for Cell 5 according to the row "T3" in table 8.3.2.5.3.2-1.	-	-	-	-
10	Wait and ignore *MeasurementReport* messages for 15s to allow power "On" for Cell 5 and to allow UE to measure the neighbouring cells.	-	-	-	-
-	EXCEPTION: In parallel to events described in steps 11 to 12 the steps specified in table 8.3.2.5.3.2-3 and 8.3.2.5.3.2-4 shall take place	-	-	-	-
11	Wait for 30 s to ensure that the UE performs a inter-RAT periodical reporting.	-	-	-	-
12	The SS transmits an *RRCConnectionReconfiguration* message to remove inter-RAT measurement.	<--	*RRCConnectionReconfiguration*	-	-
13	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the remove of inter-RAT measurement.	-->	*RRCConnectionReconfigurationComplete*	-	-
14	Check: Does the UE attempt to transmit an uplink message for the next 10s?	-	-	4	F

Table 8.3.2.5.3.2-3: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: After the 1st message is received, step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical reporting for Cell 5?	-->	*MeasurementReport*	1, 3	P

Table 8.3.2.5.3.2-4: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: After the 1st message is received, step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical reporting for Cell 24?	-->	*MeasurementReport*	1, 2, 3	P

8.3.2.5.3.3 Specific message contents

Table 8.3.2.5.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.2.5.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.2.5.3.3-2: *MeasConfig* (Table 8.3.2.5.3.3-1)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	3 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f8		
measObject[2]	MeasObjectUTRA-f8		
measObjectId[3]	IdMeasObject-f11		
measObject[3]	MeasObjectGERAN- f11		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfigInterRAT - PERIODICAL		
reportConfig[1]	ReportConfigInterRAT-PERIODICAL		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f8		
reportConfigId[1]	IdReportConfigInterRAT - PERIODICAL		
measId[2]	2		
measObjectId[2]	IdMeasObject-f11		
reportConfigId[2]	IdReportConfigInterRAT - PERIODICAL		
}			
quantityConfig SEQUENCE {			
quantityConfigUTRA SEQUENCE {			
measQuantityUTRA-FDD	cpich-RSCP		UTRA-FDD
measQuantityUTRA-TDD	pccpch-RSCP		UTRA-TDD
}			
quantityConfigGERAN SEQUENCE {			
measQuantityGERAN	rssi		
}			
}			
measGapConfig CHOICE {			
setup SEQUENCE {			
gapOffset CHOICE {			
gp1	30		
}			
}			
}			
}			

Condition	Explanation
UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

Table 8.3.2.5.3.3-2A: MeasObjectUTRA-f8 (Table 8.3.2.5.3.3-2)

Derivation path: 36.508 table 4.6.6-3 MeasObjectUTRA-GENERIC(f8)			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasObjectUTRA-GENERIC(f8) ::= SEQUENCE {			
carrierFreq	UTRA DL carrier frequency of the cell 5		
cellsToAddModList CHOICE {			
cellsToAddModListUTRA-FDD ::= SEQUENCE (SIZE (1.. maxCellMeas)) OF SEQUENCE {			UTRA-FDD
cellIndex [1]	1		
physCellId [1]	physicalCellIdentity – Cell 5		
}			
cellsToAddModListUTRA-TDD ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {			UTRA-TDD
cellIndex [1]	1		
physCellId [1]	physicalCellIdentity – Cell 5		
}			
}			
}			

Condition	Explanation
UTRA-FDD	UTRA-FDD cell environment
UTRA-TDD	UTRA-TDD cell environment

Table 8.3.2.5.3.3-3: *MeasurementReport* (step 1, Table 8.3.2.5.3.2-3)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultsNeighCells CHOICE {			
measResultListUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1] CHOICE {			
fdd	PhysicalCellIdentity of Cell 5		UTRA-FDD
tdd	PhysicalCellIdentity of Cell 5		UTRA-TDD
}			
cgi-info[1]	Not present		
measResult[1] SEQUENCE {			
utra-RSCP	(-5..91)		
}			
}			
}			
}			
}			
}			
}			

Condition	Explanation

UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

Table 8.3.2.5.3.3-4: *MeasurementReport* (step 1, Table 8.3.2.5.3.2-4)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultsNeighCells CHOICE {			
measResultListGERAN SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
carrierFreq[1] SEQUENCE {			
arfcn	Not checked		
bandIndicator	Not checked		
}			
physCellId[1]	PhysicalCellIdentity of Cell 24		
cgi-info[1]	Not present		
measResult[1] SEQUENCE {			
rssi	(0..63)		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.2.5.3.3-5: *RRCConnectionReconfiguration* (step 12, Table 8.3.2.5.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.2.5.3.3-6: *MeasConfig* (Table 8.3.2.5.3.3-5)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measIdToRemoveList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	2 entries		
measId[1]	1		
measId[2]	2		
}			
}			

Table 8.3.2.5.3.3-7: MeasObjectGERAN-f11 (Table 8.3.2.5.3.3-5)

Derivation Path: 36.508 clause 4.6.6			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectGERAN-GENERIC(Freq) ::= SEQUENCE {			
carrierFreqs SEQUENCE {			
startingARFCN	Downlink GERAN ARFCN of Cell 24		
bandIndicator	Set according to the band used for GERAN Cell 24		
followingARFCNs CHOICE {			
explicitListOfARFCNs	Empty list		
}			
}			
offsetFreq	0 (dB 0)		
ncc-Permitted	'01000000'B		
cellForWhichToReportCGI	Not present		
}			

8.3.2.6 Measurement configuration control and reporting / Inter-RAT measurements / Simultaneous A2 and two B2 / Measurements of E-UTRAN, UTRAN and GERAN cells

8.3.2.6.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurements configured for A2 on E-UTRAN, B2 on UTRAN
and B2 on GERAN at the same time }
ensure that {
  when { UE detects entering condition for the events A2 and B2 are not met }
    then { UE does not transmit any MeasurementReport messages}
            }
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and measurements configured for A2 on E-UTRAN, B2 on UTRAN
and B2 on GERAN at the same time }
ensure that {
  when { UE detects entering condition for the event A2 is met }
    then { UE transmits a MeasurementReport message}
            }
```

(3)

```
with { UE in E-UTRA RRC_CONNECTED state and measurements configured for A2 on E-UTRAN, B2 on UTRAN
and B2 on GERAN at the same time }
ensure that {
  when { UE detects entering condition for the event B2 for UTRAN is met }
    then { UE transmits a MeasurementReport message }
            }
```

(4)

```
with { UE in E-UTRA RRC_CONNECTED state and measurements configured for A2 on E-UTRAN, B2 on UTRAN
and B2 on GERAN at the same time }
ensure that {
  when { UE detects entering condition for the event B2 for GERAN is met }
    then { UE transmits a MeasurementReport message }
            }
```

8.3.2.6.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.5.4.1, 5.5.4.3, 5.5.4.8 and 5.5.5.

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the corresponding *reportConfig* includes a purpose set to '*reportStrongestCellsForSON*':

…

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the *VarMeasConfig* for this *measId*;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

[TS 36.331, clause 5.5.4.3]

The UE shall:

1> consider the entering condition for this event to be satisfied when condition A2-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition A2-2, as specified below, is fulfilled;

Inequality A2-1 (Entering condition)

$Ms + Hys < Thresh$

Inequality A2-2 (Leaving condition)

$Ms - Hys > Thresh$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any offsets.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigEUTRA* for this event).

Thresh is the threshold parameter for this event (i.e. *a2-Threshold* as defined within *reportConfigEUTRA* for this event).

Ms is expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Hys is expressed in dB.

Thresh is expressed in the same unit as ***Ms***.

[TS 36.331, clause 5.5.4.8]

The UE shall:

1> for UTRA and CDMA2000, only trigger the event for cells included in the corresponding measurement object;

1> consider the entering condition for this event to be satisfied when both condition B2-1 and condition B2-2, as specified below, are fulfilled;

1> consider the leaving condition for this event to be satisfied when condition B2-3 or condition B2-4, i.e. at least one of the two, as specified below, is fulfilled;

Inequality B2-1 (Entering condition 1)

$Ms + Hys < Thresh1$

Inequality B2-2 (Entering condition 2)

$Mn + Ofn - Hys > Thresh2$

Inequality B2-3 (Leaving condition 1)

$Ms - Hys > Thresh1$

Inequality B2-4 (Leaving condition 2)

$Mn + Ofn + Hys < Thresh2$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any offsets.

Mn is the measurement result of the inter-RAT neighbour cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the inter-RAT neighbour cell (i.e. *offsetFreq* as defined within the *measObject* corresponding to the frequency of the inter-RAT neighbour cell).

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigInterRAT* for this event).

Thresh1 is the threshold parameter for this event (i.e. b2-*Threshold1* as defined within *reportConfigInterRAT* for this event).

Thresh2 is the threshold parameter for this event (i.e. *b2-Threshold2* as defined within *reportConfigInterRAT* for this event).

Ms is expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Mn is expressed in dBm or dB, depending on the measurement quantity of the inter-RAT neighbour cell.

Ofn, Hys are expressed in dB.

Thresh1 is expressed in the same unit as ***Ms***.

Thresh2 is expressed in the same unit as ***Mn***.

[TS 36.331, clause 5.5.5]

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultsNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

…

3> for each cell that is included in the *measResultsNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of decreasing quantity, i.e. the best cell is included first;

…

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.2.6.3 Test description

8.3.2.6.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 5 and Cell 24.
- System information combination 10 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.2.6.3.2 Test procedure sequence

Table 8.3.2.6.3.2-1 illustrates the downlink power levels to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.2.6.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 5	Cell 24	Remark
T0	RS EPRE	dBm/15kHz	-85	-	-	Entry conditions for A2 and B2 events are not fulfilled.
	CPICH_Ec (UTRA FDD)	dBm/3.84 MHz	-	-80	-	
	PCCPCH_Ec (UTRA LCR TDD)	dBm/1.28 MHz	-	-80	-	
	GERAN Cell Power	dBm	-	-	-85	
T1	RS EPRE	dBm/15kHz	-105	-	-	Entry conditions for A2 and B2 events are fulfilled.
	CPICH_Ec (UTRA FDD)	dBm/3.84 MHz	-	-60	-	
	PCCPCH_Ec (UTRA LCR TDD)	dBm/1.28 MHz	-	-60	-	
	GERAN Cell Power	dBm	-	-	-65	

Table 8.3.2.6.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup intra and inter RAT measurements on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE transmit any *MeasurementReport* messages during the next 10s?	-->	*MeasurementReport*	1	F
4	The SS changes Cell 1, Cell 5 and Cell 24 parameters according to row “T1” in table 8.3.2.6.3.2-1.	-	-	-	-
-	EXCEPTION: In parallel to step 5 the steps specified in Table 8.3.2.6.3.2-3 shall take place.	-	-	-	-
5	The SS waits for 15s to allow for the switching of cells and UE measurement.	-	-	-	-
6	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicate that the UE is in E-UTRA RRC_CONNECTED state on Cell 1?	-	-	1, 2, 3, 4	-

Table 8.3.2.6.3.2-3: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: The steps 1-3 may occur in any order.	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to report event A2 for Cell 1 ?	-->	*MeasurementReport*	2	P
2	Check: Does the UE transmit a *MeasurementReport* message to report event B2 for Cell 5 ?	-->	*MeasurementReport*	3	P
3	Check: Does the UE transmit a *MeasurementReport* message to report event B2 for Cell 24 ?	-->	*MeasurementReport*	4	P

8.3.2.6.3.3 Specific message contents

Table 8.3.2.6.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.2.6.3.2-2)

Derivation Path: 36.508 table 4.6.1-8 with condition MEAS

Table 8.3.2.6.3.3-2: *MeasConfig* (Table 8.3.2.6.3.3-1)

Derivation path: 36.508 table 4.6.6-1 with condition INTER-RAT			
Information Element	**Value/Remark**	**Comment**	**Condition**
measConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	3 entries		
measObjectId[1]	IdMeasObject-EUTRA		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-UTRA		
measObject[2]	MeasObjectUTRA-f8		
measObjectId[3]	IdMeasObject-GERAN		
measObject[3]	MeasObjectGERAN-GENERIC(f11)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	3 entries		
reportConfigId[1]	IdReportConfig-A2		
reportConfig[1]	ReportConfigEUTRA-A2(-95)		
reportConfigId[2]	IdReportConfig-B2-UTRA		
reportConfig[2]	ReportConfigInterRAT-B2-UTRA(-95, -70)		
reportConfigId[3]	IdReportConfig-B2-GERAN		
reportConfig[3]	ReportConfigInterRAT-B2-GERAN(-95,-75)		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	3 entries		
measId[1]	1		
measObjectId[1]	IdMeasObject-EUTRA		
reportConfigId[1]	IdReportConfig-A2		
measId[2]	2		
measObjectId[2]	IdMeasObject-UTRA		
reportConfigId[2]	IdReportConfig-B2-UTRA		
measId[3]	3		
measObjectId[3]	IdMeasObject-GERAN		
reportConfigId[3]	IdReportConfig-B2-GERAN		
}			
quantityConfig SEQUENCE {			
quantityConfigUTRA SEQUENCE {			
measQuantityUTRA-FDD	cpich-RSCP		UTRA-FDD
measQuantityUTRA-TDD	pccpch-RSCP		UTRA-TDD
filterCoefficient	fc4		
}			
quantityConfigGERAN SEQUENCE {			
measQuantityGERAN	rssi		
filterCoefficient	fc2		
}			
}			
}			

Condition	Explanation

UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

Table 8.3.2.6.3.3-3: MeasObjectUTRA-f8 (Table 8.3.2.6.3.3-2)

Derivation path: 36.508 table 4.6.6-3 MeasObjectUTRA-GENERIC(f8)			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasObjectUTRA-GENERIC(f8) ::= SEQUENCE {			
carrierFreq	UTRA DL carrier frequency of the cell 5		
cellsToAddModList CHOICE {			
cellsToAddModListUTRA-FDD ::= SEQUENCE (SIZE (1.. maxCellMeas)) OF SEQUENCE {			UTRA-FDD
cellIndex [1]	1		
physCellId [1]	physicalCellIdentity – Cell 5		
}			
cellsToAddModListUTRA-TDD ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {			UTRA-TDD
cellIndex [1]	1		
physCellId [1]	physicalCellIdentity – Cell 5		
}			
}			
}			

Condition	Explanation
UTRA-FDD	UTRA-FDD cell environment
UTRA-TDD	UTRA-TDD cell environment

Table 8.3.2.6.3.3-4: Void

Table 8.3.2.6.3.3-5: Void

Table 8.3.2.6.3.3-6: *MeasurementReport* (step 1 Table 8.3.2.6.3.2-3)

Derivation path: 36.508 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {}	Not present		
}			
}			
}			
}			
}			

Table 8.3.2.6.3.3-7: *MeasurementReport* (step 2 Table 8.3.2.6.3.2-3)

Derivation path: 36.508 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell ::= SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {		Report Cell 5	
measResultListUTRA SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultUTRA SEQUENCE {	1 entry		
physCellId [1]	physCellId of cell 5		
cgi-Info [1]	Not present		
measResult [1] SEQUENCE {			
utra-RSCP	(-5..91)		
}			
}			
}			
}			
}			
}			
}			

Table 8.3.2.6.3.3-8: *MeasurementReport* (step 3 Table 8.3.2.6.3.2-3)

Derivation path: 36.508 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	3		
measResultServCell ::= SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {		Report Cell 24	
measResultListGERAN SEQUENCE (SIZE (1..maxCellReport)) OF MeasResultGERAN SEQUENCE {	1 entry		
carrierFreq [1]	Not checked		
physCellId [1]	physCellId of cell 24		
cgi-Info [1]	Not present		
measResult [1] SEQUENCE {			
rssi	(0..63)		
}			
}			
}			
}			
}			
}			
}			

8.3.2.7 Measurement configuration control and reporting / Inter-RAT measurements / Event B2 (measurement HRPD cells)

8.3.2.7.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for HRPD cell and not detected entering condition for the event
B2 is met }
ensure that {
  when { UE detects entering condition for the event B2 is not met }
    then { UE does not transmit any MeasurementReport }
            }
```

(2)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for HRPD cell and not detected entering condition for the event
B2 is met }
ensure that {
  when { UE detects entering condition for the event B2 is met }
    then { UE transmits a MeasurementReport }
            }
```

(3)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for HRPD cell and detected entering condition for the event B2
is met }
ensure that {
  when { UE detects leaving condition for the event B2 is met }
    then { UE does not transmit any MeasurementReport }
            }
```

8.3.2.7.2 Conformance Requirements

References: The conformance requirements covered in the present TC are specified in: 3GPP TS 36.331 clauses 5.5.4.1, 5.5.4.8, and 5.5.5.

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:…

2>else:

…

3> if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModifyList* defined within the *VarMeasurementConfiguration* for this *measId* (i.e. the cell is included in the white-list);

…

2> if the *triggerType* is set to 'event' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasurementConfiguration*, is fulfilled for one or more applicable cells for a duration exceeding the value of *timeToTrigger* defined for this event within the *VarMeasurementConfiguration* while the *VarMeasurementReports* does not include an entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to 'event' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to 'event' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

…

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup .

[TS 36.331, clause 5.5.4.8]

The UE shall:

1> for UTRA and CDMA2000, only trigger the event for cells included in the corresponding measurement object;

1> apply inequality B2-1 and inequality B2-2 i.e. both have to be fulfilled, as specified below, as the entry condition for this event;

1> apply inequality B2-3 and inequality B2-4 i.e. at least one of the two has to be fulfilled, as specified below, as the leaving condition for this event;

Inequality B2-1 (Entering condition 1)

$Ms + Hys < Thresh1$

Inequality B2-2 (Entering condition 2)

$Mn + Ofn - Hys > Thresh2$

Inequality B2-3 (Leaving condition 1)

$Ms - Hys > Thresh1$

Inequality B2-4 (Leaving condition 2)

$Mn + Ofn + Hys < Thresh2$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any offset.

Mn is the measurement result of the inter-RAT neighbour cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the inter-RAT neighbour cell (i.e. *offsetFreq* as defined within the *measObject* corresponding to the frequency of the inter-RAT neighbour cell).

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigInterRAT* for this event).

Thresh1 is the threshold parameter for this event (i.e. b2-*Threshold1* as defined within *reportConfigInterRAT* for this event).

Thresh2 is the threshold parameter for this event (i.e. *b2-Threshold2* as defined within *reportConfigInterRAT* for this event).

Ms is expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Mn is expressed in dBm or dB, depending on the measurement quantity of the inter RAT neighbour cell.

Ofn, Hys are expressed in dB.

Thresh1 is expressed in the same unit as ***Ms***.

Thresh2 is expressed in the same unit as ***Mn***.

[TS 36.331, clause 5.5.5]

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasurementReports* for this *measId*;

…

> for each cell that is included in the measResultNeighCells, include the physCellId;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

…

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId* :

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

…

1> if the measured results are for CDMA2000 1xRTT:

2> set the preRegistrationStatusHRPD to ` *FALSE*";

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends.

8.3.2.7.3 Test description

8.3.2.7.3.1 Pre-test conditions

System Simulator:

- Cell 1 is high quality cell on E-UTRA
- Cell 15 and Cell 16 are high quality cell on HRPD.
- System information combination 6 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.2.7.3.2 Test procedure sequence

Table 8.3.2.7.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions, while columns marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.2.7.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 15	Cell 16	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-60	-	-	The power level values are such that entering conditions for event B2 are not satisfied.
	Îor/Ioc	dB	-	-20	-20	
	Ioc	dBm/1.23 MHz	-	-55	-55	
	Pilot_Ec/Io (Note 1)	dB	-	-20	-20	
T1	Cell-specific RS EPRE	dBm/15 kHz	-80	-	-	The power level values are such that entering conditions for event B2 are satisfied.
	Îor/Ioc	dB	-	-5	-20	
	Ioc	dBm/1.23 MHz	-	-55	-55	
	Pilot_Ec/Io (Note 1)	dB	-	-6	-20	
T2	Cell-specific RS EPRE	dBm/15 kHz	-60	-	-	The power level values are such that leaving conditions for event B2 are satisfied.
	Îor/Ioc	dB	-	-20	-20	
	Ioc	dBm/1.23 MHz	-	-55	-55	
	Pilot_Ec/Io (Note 1)	dB	-	-20	-20	
Note 1: This parameter is not directly settable, but is derived by calculation from the other parameters set by the SS.						

Table 8.3.2.7.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup inter RAT measurement on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the setup of inter RAT measurement on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE transmit a *MeasurementReport* message to report the event B2 during the next 10s?	-->	*MeasurementReport*	1	F
4	The SS changes Cell 1, Cell 15 and Cell 16 parameters according to row “T1” in table 8.3.2.7.3.2-1.	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message to report the event B2 for Cell 15, not including Cell 16?	-->	*MeasurementReport*	2	P
6	Void	-	-	-	-
7	The SS changes Cell 1, Cell 15 and Cell 16 parameters according to row “T2” in table 8.3.2.7.3.2-1.	-	-	-	-
8	Check: Does the UE transmit a *MeasurementReport* message to report the event B2 during the next 10s?	-->	*MeasurementReport*	3	F
9-13	Void	-	-	-	-
14	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicate that the UE is in E-UTRA RRC_CONNECTED state on Cell 1?	-	-	1,2, 3	-

8.3.2.7.3.3 Specific Message Contents

Table 8.3.2.7.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.2.7.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
radioResourceConfiguration	Not present		
}			
}			
}			
}			

Table 8.3.2.7.3.3-2: *MeasConfig* (Table 8.3.2.7.3.3-1)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2ies entr		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f14		
measObject[2]	MeasObjectCDMA2000-GENERIC		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-B2-CDMA2000		
reportConfig[1]	ReportConfigInterRAT-B2-CDMA2000(-69, -18)		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f14		
reportConfigId[1]	IdReportConfig-B2-CDMA2000		
}			
quantityConfig SEQUENCE {			
quantityConfigCDMA2000 SEQUENCE {			
measQuantityCDMA2000	pilotStrength		
}			
}			
measGapConfig CHOICE {			
setup SEQUENCE {			
gapOffset CHOICE {			
gp1	30		
}			
}			
}			
}			

Table 8.3.2.7.3.3-3: *MeasObjectCDMA2000-GENERIC* (Table 8.3.2.7.3.3-2)

Derivation Path: 36.508, Table 4.6.6-1C			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectCDMA2000-GENERIC ::= SEQUENCE {			
cdma2000-Type	TypeHRPD		
carrierFreq SEQUENCE {			
bandClass	Band Class of frequency under test		
arfcn	f14		
}			
searchWindowSize	15		
offsetFreq	db0		
cellsToRemoveList	Not present		
cellsToAddModList CHOICE {			
cellsToAddModListCDMA2000 ::= SEQUENCE (SIZE (1.. maxCellMeas)) OF SEQUENCE {			
cellIndex [1]	1		
physCellId [1]	physicalCellIdentity – Cell 15		
}			
}			
cellForWhichToReportCGI	Not present		
}			

Table 8.3.2.7.3.3-4: *MeasurementReport* (steps 5, Table 8.3.2.7.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultsCDMA2000 :=SEQUENCE {			
preRegistrationStatusHRPD	FALSE		
measResultListCDMA2000 ::=SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId [1]	PhysicalCellIdentity of Cell 15		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
pilotPnPhase	Not present		
pilotStrength	(0..63)		
}			
}			
}			
}			
}			
}			
}			
}			
}			

8.3.2.8 Measurement configuration control and reporting / Inter-RAT measurements / Periodic reporting / Measurement of HRPD cells)

8.3.2.8.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurement configured for periodic reporting of HRPD
cells }
ensure that {
  when { The UE receives reference signal power for cells on the HRPD frequency where measurements
are configured }
   then { UE sends MeasurementReport message at regular intervals for these HRPD cells }
            }
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and a Measurement Report message for a configured periodic
measurement reporting of HRPD cells on a configured frequency were sent }
ensure that {
  when { A previously reported cell become unavailable or the UE receives reference signal power on
a reported HRPD frequency for a cell which was previously not reported }
   then { UE sends MeasurementReport message at regular intervals for the available HRPD cells }

}
```

(3)

```
with { UE in E-UTRA RRC_CONNECTED state and periodic measurement reporting of HRPD cells ongoing}
ensure that {
  when { The UE receives a RRCConnectionReconfiguration message removing the measID of periodic
reporting of HRPD cells }
   then { UE stops sending MeasurementReport message for HRPD cells }
}
```

8.3.2.8.2 Conformance Requirements

References: The conformance requirements covered in the present TC are specified in: 3GPP TS 36.331 clauses 5.3.5.3, 5.5.2.2, 5.5.4.1 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInformation* and the UE is able to comply with the configuration included in this message, the UE shall:

……

1> if the *RRCConnectionReconfiguration* message includes the *measurementConfiguration*:

2> perform the measurement configuration procedure as specified in 5.5.2;

[TS 36.331, clause 5.5.2.2]

The UE shall:

1> for each *measId* value included in the *measIdToRemoveList*:

2> remove the entry, from the parameter *measIdList* within *VarMeasurementConfiguration*, with the corresponding *measId* value;

2> remove the entry within the *VarMeasurementReports* for this *measId*, if included;

2> reset the periodical reporting timer or timer T321, whichever one is running, as well as associated information (e.g. *timeToTrigger*) for this *measId*.

[TS 36.331, clause 5.5.4.1]

[Rel-8]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasurementConfiguration*:

2> if the *triggerType* is set to '*event*':

3> if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModifyList* defined within the *VarMeasurementConfiguration* for this *measId* (i.e. the cell is included in the white-list);

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the *VarMeasurementConfiguration* for this *measId*;

3> else if the corresponding *measObject* concerns EUTRA:

4> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackListedCellsToAddModifyList* defined within the *VarMeasurementConfiguration* for this *measId*;

2> else consider a neighbouring cell on the associated frequency/ set of frequencies (GERAN) to be applicable as follows:

3> if the corresponding *reportingConfig* includes a purpose set to '*reportStrongestCellsForSON*':

4> consider any neighbouring cell detected on the associated frequency to be applicable

3> if the corresponding *reportingConfig* includes a purpose set to '*reportCGI*':

4> consider any neighbouring cell detected on the associated frequency/ set of frequencies (GERAN) which has a *physicalCellIdentity* matching the value of the *cellForWhichToReportCGI* included in the corresponding *measObject* within the *VarMeasurementConfiguration* to be applicable

3> else:

4> if the corresponding *measObject* concerns UTRA or CDMA2000:

5> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModifyList* defined within the *VarMeasurementConfiguration* for this *measId* (i.e. the cell is included in the white-list);

…….

2> if the *triggerType* is set to '*periodical*' and a (first) measurement result is available for one or more applicable cells:

3> include an entry within the *VarMeasurementReports* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasurementReports* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*', the UE initiates a first measurement report immediately after the requested *reportQuantity* becomes available for at least either serving cell or one of the applicable cells

2> Upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> upon expiry of the T321 for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

[Rel-11]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the corresponding *reportConfig* includes a purpose set to *reportStrongestCellsForSON*:

3> consider any neighbouring cell detected on the associated frequency to be applicable;

2> else if the corresponding *reportConfig* includes a purpose set to *reportCGI*:

3> consider any neighbouring cell detected on the associated frequency/ set of frequencies (GERAN) which has a physical cell identity matching the value of the *cellForWhichToReportCGI* included in the corresponding *measObject* within the *VarMeasConfig* to be applicable;

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> if the *ue-RxTxTimeDiffPeriodical* is configured in the corresponding *reportConfig*:

5> consider only the PCell to be applicable;

4> else if the *eventA1* or *eventA2* is configured in the corresponding *reportConfig*:

5> consider only the serving cell to be applicable;

4> else:

5> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

5> for events involving a serving cell on one frequency and neighbours on another frequency, consider the serving cell on the other frequency as a neighbouring cell;

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

NOTE 0: The UE may also consider a neighbouring cell on the associated UTRA frequency to be applicable when the concerned cell is included in the *csg-allowedReportingCells* within the *VarMeasConfig* for this *measId*, if configured in the corresponding *measObjectUTRA* (i.e. the cell is included in the range of physical cell identities for which reporting is allowed).

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the *VarMeasConfig* for this *measId*;

2> if the *triggerType* is set to *event* and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to *event* and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to *event* and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration or if *a6-ReportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to *reportStrongestCells* or to *reportStrongestCellsForSON* and if a (first) measurement result is available:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to *reportStrongestCells* and *reportAmount* > 1, the UE initiates a first measurement report immediately after the quantity to be reported becomes available for the PCell. If the *purpose* is set to *reportStrongestCells* and *reportAmount* = 1, the UE initiates a first measurement report immediately after the quantity to be reported becomes available for the PCell and for the strongest cell among the applicable cells. If the purpose is set to *reportStrongestCellsForSON*, the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

[TS 36.331, clause 5.5.5]

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measuredResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *neighbouringMeasResults* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

2> if the *triggerType* is set to '*event*':

3> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasurementReports* for this *measId*;

2> else:

3> set the *neighbouringMeasResults* to include the applicable cells for which the requested *reportQuantity* has been available since the last periodical reporting or since the measurement was initiated or reset;

2> for each cell that is included in the *neighbouringMeasResults*, include the *physicalCellIdentity*;

1> increment the *numberOfReportsSent* as defined within the V*arMeasurementReports* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the V*arMeasurementReports* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportingConfiguration* as defined in the *VarMeasurementConfiguration*:

2> stop the periodical reporting timer, if running;

2> start the periodical reporting timer with the value of *reportInterval* as defined within the *VarMeasurementConfiguration* for this *measId*;

1> else if the *numberOfReportsSent* as defined within the V*arMeasurementReports* for this *measId* is equal to the *reportAmount* as defined within the corresponding *reportingConfiguration* as defined in the *VarMeasurementConfiguration*:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasurementReports* for this *measId*;

1> if the measured results are for CDMA HRPD:

2> set the *hrpdPreRegistrationStatus* to the UE's CDMA upper layer's HRPD *preRegistrationStatus*;

1> if the measured results are for CDMA 1xRTT:

2> set the hrpd*PreRegistrationStatus* to `0';

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends.

8.3.2.8.3 Test description

8.3.2.8.3.1 Pre-test conditions

System Simulator:

- Cell 1 is high quality cell on E-UTRA
- Cell 15 and Cell 16 are high quality cell on HRPD
- System information combination 6 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is brought to state Generic RB Established (state 3) according to [18] on Cell 1

8.3.2.8.3.2 Test procedure sequence

Table 8.3.2.8.3.2-1 illustrates the downlink power levels to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions, while rows marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.2.8.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 15	Cell 16	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-60	-	-	Power levels shall be such that camping on Cell 1 is guaranteed.
	Îor/Ioc	dB	-	-5	-20	
	Ioc	dBm/1.23 MHz	-	-55	-55	
	CPICH_Ec/Io (Note 1)	dB	-	-6	-20	
T1	Cell-specific RS EPRE	dBm/15 kHz	-60	-	-	
	Ior/Ioc	dB	-	-5	-5	
	Ioc	dBm/1.23 MHz	-	-55	-55	
	CPICH_Ec/Io (Note 1)	dB	-	-6	-6	
T2	Cell-specific RS EPRE	dBm/15 kHz	-60	-	-	
	Îor/Ioc	dB	-	-20	-5	
	Ioc	dBm/1.23 MHz	-	-55	-55	
	CPICH_Ec/Io (Note 1)	dB	-	-20	-6	
Note 1: This parameter is not directly settable, but is derived by calculation from the other parameters set by the SS.						

Table 8.3.2.8.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message including measConfig to setup measurements and periodical reporting for HRPD cells.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
2A	Wait and ignore *MeasurementReport* messages for 5 s to allow for detection and measurement of HRPD cells.	-	-	-	-
-	EXCEPTION: In parallel to events described in steps 3 and 4, the steps specified in table 8.3.2.8.3.2-3 shall take place	-	-	-	-
3	Wait for 30 s to ensure that the UE performs periodical reporting of HRPD cells.	-	-	-	-
4	SS sets the cell-specific reference signal levels for Cell 1, Cell 15 and Cell 16 according to row "T1" in table 8.3.2.8.3.2-1.	-	-	-	-
5	Wait and ignore *MeasurementReport* messages for 5 s to allow for the switching of cells.	-	-	-	-
-	EXCEPTION: In parallel to events described in steps 6 to 7, the steps specified in table 8.3.2.8.3.2-4 shall take place	-	-	-	-
6	Wait for 30 s to ensure that the UE performs a periodical reporting of HRPD cells.	-	-	-	-
7	SS sets the cell-specific reference signal levels for Cell 1, Cell 15 and Cell 16 according to row "T2" in table8.3.2.8.3.2-1.	-	-	-	-
8	Wait and ignore *MeasurementReport* messages for 5 s to allow for the switching of cells.	-	-	-	-
-	EXCEPTION: In parallel to events described in steps 9 to 10, the steps specified in table 8.3.2.8.3.2-5 shall take place	-	-	-	-
9	Wait for 30 s to ensure that the UE performs periodical reporting of HRPD cells.	-	-	-	-
10	SS transmits an *RRCConnectionReconfiguration* message including measurementConfiguration to remove measId for periodic reporting.	<--	*RRCConnectionReconfiguration*	-	-
11	The UE transmits an R*RCConnectionReconfigrationComplete* message	-->	*RRCConnectionReconfigurationComplete*	-	-
12	Wait for 30s for the UE so send a MeasurementReport.	-->	*MeasurementReport*	3	F

Table 8.3.2.8.3.2-3: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: Step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical intra frequency reporting for Cell 15?	-->	*MeasurementReport*	1	P

Table 8.3.2.8.3.2-4: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: Step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical intra frequency reporting for Cell 15 and Cell 16?	-->	*MeasurementReport*	1, 2	P

Table 8.3.2.8.3.2-5: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: Step 1 shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.				
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical intra frequency reporting for Cell 16?	-->	*MeasurementReport*	1, 2	P

8.3.2.8.3.3 Specific message contents

Table 8.3.2.8.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.2.8.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
radioResourceConfiguration	Not present		
}			
}			
}			
}			

Table 8.3.2.8.3.3-2: *MeasConfig* (Table 8.3.2.8.3.3-1)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
measConfig ::= SEQUENCE {			
measObjectToAddModifyList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f14		
measObject[2]	MeasObjectCDMA2000-GENERIC		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig- f14		
reportConfig[1]	ReportConfigInterRAT-PERIODICAL		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f14		
reportConfigId[1]	IdReportConfig- f14		
}			
quantityConfig SEQUENCE {			
quantityConfigCDMA2000 SEQUENCE {			
measQuantityCDMA2000	pilotStrength		
}			
}			
measGapConfig CHOICE {			
setup SEQUENCE {			
gapOffset CHOICE {			
gp1	30		
}			
}			
}			
}			

Table 8.3.2.8.3.3-3: *MeasObjectCDMA2000-GENERIC* (Table8.3.2.8.3.3-2)

Derivation Path: 36.508, Table 4.6.6-1C			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectCDMA2000-GENERIC ::= SEQUENCE {			
cdma2000-Type	TypeHRPD		
carrier Freq SEQUENCE {			
bandClass	Band Class of frequency under test		
bandClassfrequency	f14		
}			
searchWindowSize	15		
cellsToAddModifyList SEQUENCE (SIZE (1..maxCellMeas)) OF SEQUENCE {	Not present		
cellIndex [1]	1		
physCellId [1]	PhysicalCellIdentity of Cell 15		
cellIndex [2]	2		
physCellId [2]	PhysicalCellIdentity of Cell 16		
}			
}			

Table 8.3.2.8.3.3-3A: ReportConfigInterRAT-PERIODICAL-CDMA2000 (step 1, Table 8.3.2.8.3.2-2)

Derivation Path: 36.508 table 4.6.6-9 ReportConfigInterRAT-PERIODICAL			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-PERIODICAL ::= SEQUENCE {			
maxReportCells	2	Report Cell 15 and Cell 16	
}			

Table 8.3.2.8.3.3-4: *MeasurementReport* (step 1 Table 8.3.2.8.3.2-3, Table 8.3.2.8.3.2-4, Table 8.3.2.8.3.2-5)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultsCDMA2000 :=SEQUENCE {			
preRegistrationStatusHRPD	FALSE		
measResultListCDMA2000 ::=SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE	1 or 2 entries		Table 8.3.2.8.3.2-3
{			1 entry
physCellId[1]	PhysicalCellIdentity of Cell 15		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
pilotStrength	(0..63)		
}			
}			
{			2 entries
physCellId[1]	PhysicalCellIdentity of Cell 15		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
pilotStrength	(0..62)		
}			
physCellId[2]	PhysicalCellIdentity of Cell 16		
cgi-Info[2]	Not present		
measResult[2] SEQUENCE {			
pilotStrength	(35..63)		
}			
}			
measResultListCDMA2000 ::=SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	2 entries	Cells can be reported in any order.	Table 8.3.2.8.3.2-4
physCellId[1]	PhysicalCellIdentity of Cell 15		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
pilotStrength	(0..63)		
}			
physCellId[2]	PhysicalCellIdentity of Cell 16		
cgi-Info[2]	Not present		
measResult[1] SEQUENCE {			
pilotStrength	(0..63)		

}			
}			
measResultListCDMA2000 ::=SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE	1 or 2 entries		Table 8.3.2.8.3.2-5
{			1 entry
physCellId[1]	PhysicalCellIdentity of Cell 16		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
pilotStrength	(0..63)		
}			
}			
{			2 entries
physCellId[1]	PhysicalCellIdentity of Cell 16		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
pilotStrength	(0..62)		
}			
physCellId[2]	PhysicalCellIdentity of Cell 15		
cgi-Info[2]	Not present		
measResult[2] SEQUENCE {			
pilotStrength	(35..63)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.2.8.3.3-5: *RRCConnectionReconfiguration* (step 10, Table 8.3.2.8.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.2.8.3.3-6: *MeasConfig* (Table 8.3.2.8.3.3-5)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measIdToRemoveList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
}			
}			

8.3.2.9 Measurement configuration control and reporting / Inter-RAT measurements / Event B2 / Measurement of 1xRTT cells)

8.3.2.9.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for 1xRTT cell and not detected entering condition for the event
B2 is met }
ensure that {
  when { UE detects entering condition for the event B2 is not met }
    then { UE does not transmit any MeasurementReport }
            }
```

(2)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for 1xRTT cell and not detected entering condition for the event
B2 is met }
ensure that {
  when { UE detects entering condition for the event B2 is met }
    then { UE transmits a MeasurementReport }
            }
```

(3)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for 1xRTT cell and detected entering condition for the event B2
is met }
ensure that {
  when { UE detects leaving condition for the event B2 is met }
    then { UE does not transmit any MeasurementReport }
            }
```

8.3.2.9.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.5.4.1, 5.5.4.8 and 5.5.5.

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*

…

2>else :

…

3> if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

…

2> if the *triggerType* is set to 'event' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to 'event' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to 'event' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfign* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the V*arMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the V*arMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

[TS 36.331, clause 5.5.4.8]

The UE shall:

1> for UTRA and CDMA2000, only trigger the event for cells included in the corresponding measurement object;

1> consider the entering condition for this event to be satisfied when both condition B2-1 and condition B2-2, as specified below, are fulfilled;

1> consider the leaving condition for this event to be satisfied when condition B2-3 or condition B2-4, i.e. at least one of the two, as specified below, is fulfilled;

Inequality B2-1 (Entering condition 1)

$$Ms + Hys < Thresh1$$

Inequality B2-2 (Entering condition 2)

$$Mn + Ofn - Hys > Thresh2$$

Inequality B2-3 (Leaving condition 1)

$$Ms - Hys > Thresh1$$

Inequality B2-4 (Leaving condition 2)

$$Mn + Ofn + Hys < Thresh2$$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any offsets.

Mn is the measurement result of the inter-RAT neighbour cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the inter-RAT neighbour cell (i.e. *offsetFreq* as defined within the *measObject* corresponding to the frequency of the inter-RAT neighbour cell).

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigInterRAT* for this event).

Thresh1 is the threshold parameter for this event (i.e. b2-*Threshold1* as defined within *reportConfigInterRAT* for this event).

Thresh2 is the threshold parameter for this event (i.e. *b2-Threshold2* as defined within *reportConfigInterRAT* for this event).

Ms is expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Mn is expressed in dBm or dB, depending on the measurement quantity of the inter-RAT neighbour cell.

Ofn, Hys are expressed in dB.

Thresh1 is expressed in the same unit as ***Mn***.

Thresh2 is expressed in the same unit as ***Mn***.

[TS 36.331, clause 5.5.5]

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measuredResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultsNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultsNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of decreasing quantity, i.e. the best cell is included first;

3> else if the *purpose* is set to '*reportCGI*':

4> if the mandatory present fields of the *globalCellIdentity* for the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* have been obtained:

5> include the *cgi-Info* containing all the fields that have been successfully acquired;

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

1> else:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasReportList* for this *measId*;

3> remove this *measId* from the *measIdList* within *VarMeasConfig*;

1> if the measured results are for CDMA2000 HRPD:

2> set the *preRegistrationStatusHRPD* to the UE's CDMA2000 upper layer's HRPD *preRegistrationStatus*;

1> if the measured results are for CDMA2000 1xRTT:

2> set the *preRegistrationStatusHRPD* to '*FALSE*';

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.2.9.3 Test description

8.3.2.9.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 19 and Cell 20.
- System information combination 6 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.2.9.3.2 Test procedure sequence

Table 8.3.2.9.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions, while rows marked "T1", "T2", "T3" and "T4" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.2.9.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 19	Cell 20	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-60	-	-	The power level values are such that entering conditions for event B2 are not satisfied.
	Îor/Ioc	dB	-	-15	-15	
	Pilot Ec/Ior	dB	-	-7	-7	
	Ioc	dBm/1.23 MHz	-	-75	-75	
	Pilot Ec/Io (Note 1)	dB	-	-22	-22	
T1	Cell-specific RS EPRE	dBm/15 kHz	-80	-	-	The power level values are such that entering conditions for event B2 are satisfied.
	Îor/Ioc	dB	-	0	-15	
	Pilot Ec/Ior	dB	-	-7	-7	
	Ioc	dBm/1.23 MHz	-	-75	-75	
	Pilot _Ec/Io (Note 1)	dB	-	-10	-22	
T2	Cell-specific RS EPRE	dBm/15 kHz	-60	-	-	The power level values are such that leaving conditions for event B2 are satisfied.
	Îor/Ioc	dB	-	-15	-15	
	Pilot Ec/Ior	dB	-	-7	-7	
	Ioc	dBm/1.23 MHz	-	-75	-75	
	Pilot Ec/Io (Note 1)	dB	-	-22	-22	
T3	Cell-specific RS EPRE	dBm/15 kHz	-80	-	-	The power level values are such that entering conditions for event B2 are satisfied.
	Îor/Ioc	dB	-	0	-15	
	Pilot Ec/Ior	dB	-	-7	-7	
	Ioc	dBm/1.23 MHz	-	-75	-75	
	Pilot Ec/Io (Note 1)	dB	-	-10	-22	
T4	Cell-specific RS EPRE	dBm/15 kHz	-60	-	-	The power level values are such that leaving conditions for event B2 are satisfied.
	Îor/Ioc	dB	-	-15	-15	
	Pilot Ec/Ior	dB	-	-7	-7	
	Ioc	dBm/1.23 MHz	-	-75	-75	
	Pilot Ec/Io (Note 1)	dB	-	-22	-22	
Note 1: This parameter is not directly settable, but is derived by calculation from the other parameters set by the SS.						

Table 8.3.2.9.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup inter RAT measurement on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the setup of inter RAT measurement on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE transmit a *MeasurementReport* message to report the event B2 during the next 10s?	-->	*MeasurementReport*	1	F
4	The SS changes Cell 1, Cell 19 and Cell 20 parameters according to row “T1” in table 8.3.2.9.3.2-1.	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message to report the event B2 for Cell 19, not including Cell 20?	-->	*MeasurementReport*	2	P
6	Void	-	-	-	-
7	The SS changes Cell 1, Cell 19 and Cell 20 parameters according to row “T2” in table 8.3.2.9.3.2-1.	-	-	-	-
8	Check: Does the UE transmit a *MeasurementReport* message to report the event B2 during the next 10s?	-->	*MeasurementReport*	3	F
9	The SS changes Cell 1, Cell 19 and Cell 20 parameters according to row “T3” in table 8.3.2.9.3.2-1.	-	-	-	-
10	Check: Does the UE transmit a *MeasurementReport* message to report the event B2 for Cell 19, not including Cell 20?	-->	*MeasurementReport*	2	P
11	Void	-	-	-	-
12	The SS changes Cell 1, Cell 19 and Cell20 parameters according to row “T4” in table 8.3.2.9.3.2-1.	-	-	-	-
13	Check: Does the UE transmit a *MeasurementReport* message to report the event B2 during the next 10s?	-->	*MeasurementReport*	3	F
14	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicate that the UE is in E-UTRA RRC_CONNECTED state on Cell 1?	-	-	-	-

8.3.2.9.3.3 Specific message contents

Table 8.3.2.9.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.2.9.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.2.9.3.3-2: *MeasConfig* (Table 8.3.2.9.3.3-1)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f17		
measObject[2]	MeasObjectCDMA2000-GENERIC		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-B2-CDMA2000		
reportConfig[1]	ReportConfigInterRAT-B2-CDMA2000(-69, -18)		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f17		
reportConfigId[1]	IdReportConfig-B2-CDMA2000		
}			
quantityConfig SEQUENCE {			
quantityConfigCDMA2000 SEQUENCE {			
measQuantityCDMA2000	pilotStrength		
}			
}			
measGapConfig CHOICE {			
setup SEQUENCE {			
gapOffset CHOICE {			
gp1	30		
}			
}			
}			
}			

Table 8.3.2.9.3.3-3: *MeasObjectCDMA2000-GENERIC* (Table 8.3.2.9.3.3-2)

Derivation Path: 36.508, Table 4.6.6-1C			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectCDMA2000-GENERIC ::= SEQUENCE {			
cdma2000-Type	Type1XRTT		
CarrierFreqCDMA2000 SEQUENCE {			
bandClass	Band Class of frequency under test		
arfcn	f17		
}			
searchWindowSize	15		
offsetFreq	db0		
cellsToRemoveList	Not present		
cellsToAddModList CHOICE {}	[Not present]		
cellForWhichToReportCGI	Not present		
}			

Table 8.3.2.9.3.3-3: *MeasurementReport* (steps 5 and 10, Table 8.3.2.9.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResults NeighCells CHOICE {			
measResultsCDMA2000 :=SEQUENCE {			
preRegistrationStatusHRPD	FALSE		
measResultListCDMA2000 ::=SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 19		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
pilotStrength	(0..63)		
}			
}			
}			
}			
}			
}			
}			
}			

8.3.2.10 Measurement configuration control and reporting / Inter-RAT measurements / Periodic reporting / Measurement of 1xRTT cells

8.3.2.10.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurement configured for periodic reporting of 1xRTT
cells }
ensure that {
  when { The UE receives reference signal power for cells on the 1xRTT frequency where measurements
are configured }
   then { UE sends MeasurementReport message at regular intervals for these 1xRTT cells }
          }
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and a Measurement Report message for a configured periodic
measurement reporting of 1xRTT cells on a configured frequency was sent }
ensure that {
  when { A previously reported cell become unavailable or the UE receives reference signal power on
a reported 1xRTT frequency for a cell which was previously not reported }
   then { UE sends MeasurementReport message at regular intervals for the available 1xRTT cells }
          }
```

(3)

```
with { UE in E-UTRA RRC_CONNECTED state and periodic measurement reporting of 1xRTT cells ongoing}
ensure that {
  when { The UE receives an RRCConnectionReconfiguration message removing the measID of periodic
reporting of 1xRTT cells }
   then { UE stops sending MeasurementReport message for 1xRTT cells }
          }
```

8.3.2.10.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.2.2, 5.5.4.1 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> If the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the Measurement configuration procedure as specified in 5.5.2;

[TS 36.331, clause 5.5.2.2]

The UE shall:

1> for each *measId* included in the received *measIdToRemoveList* that is part of the current UE configuration in *varMeasConfig*:

2> remove the entry with the matching *measId* from the *measIdList* within the *VarMeasConfig*;

2> remove the measurement reporting entry for this *measId* from the *VarMeasReportList*, if included;

2> stop the periodical reporting timer or timer T321, whichever one is running, and reset the associated information (e.g. *timeToTrigger*) for this *measId*;

NOTE: The UE does not consider the message as erroneous if the *measIdToRemoveList* includes any *measId* value that is not part of the current UE configuration.

[TS 36.331, clause 5.5.4.1]

[Rel-8]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the corresponding *reportConfig* includes a purpose set to '*reportStrongestCellsForSON*':

…

2> else if the corresponding *reportConfig* includes a purpose set to '*reportCGI*':

…

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

…

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

…

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

…

2> upon expiry of the T321 for this *measId*:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

NOTE 3: If the UE is configured with DRX, the UE may delay the measurement reporting for event triggered and periodical triggered measurements until the Active Time, which is defined in TS 36.321 [6].

[Rel-11]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the corresponding *reportConfig* includes a purpose set to *reportStrongestCellsForSON*:

3> consider any neighbouring cell detected on the associated frequency to be applicable;

2> else if the corresponding *reportConfig* includes a purpose set to *reportCGI*:

3> consider any neighbouring cell detected on the associated frequency/ set of frequencies (GERAN) which has a physical cell identity matching the value of the *cellForWhichToReportCGI* included in the corresponding *measObject* within the *VarMeasConfig* to be applicable;

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> if the *ue-RxTxTimeDiffPeriodical* is configured in the corresponding *reportConfig*:

5> consider only the PCell to be applicable;

4> else if the *eventA1* or *eventA2* is configured in the corresponding *reportConfig*:

5> consider only the serving cell to be applicable;

4> else:

5> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

5> for events involving a serving cell on one frequency and neighbours on another frequency, consider the serving cell on the other frequency as a neighbouring cell;

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

NOTE 0: The UE may also consider a neighbouring cell on the associated UTRA frequency to be applicable when the concerned cell is included in the *csg-allowedReportingCells* within the *VarMeasConfig* for this *measId*, if configured in the corresponding *measObjectUTRA* (i.e. the cell is included in the range of physical cell identities for which reporting is allowed).

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the *VarMeasConfig* for this *measId*;

2> if the *triggerType* is set to *event* and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to *event* and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to *event* and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration or if *a6-ReportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to *reportStrongestCells* or to *reportStrongestCellsForSON* and if a (first) measurement result is available:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to *reportStrongestCells* and *reportAmount* > 1, the UE initiates a first measurement report immediately after the quantity to be reported becomes available for the PCell. If the *purpose* is set to *reportStrongestCells* and *reportAmount* = 1, the UE initiates a first measurement report immediately after the quantity to be reported becomes available for the PCell and for the strongest cell among the applicable cells. If the purpose is set to *reportStrongestCellsForSON*, the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

[TS 36.331, clause 5.5.5]

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultsNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

…

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultsNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

…

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of decreasing quantity, i.e. the best cell is included first;

3> else if the *purpose* is set to '*reportCGI*':

…

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

1> else:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasReportList* for this *measId*;

3> remove this *measId* from the *measIdList* within *VarMeasConfig*;

1> if the measured results are for CDMA2000 HRPD:

…

1> if the measured results are for CDMA2000 1xRTT:

2> set the *preRegistrationStatusHRPD* to '*FALSE*';

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.2.10.3 Test description

8.3.2.10.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 19 and Cell 20.
- System information combination 6 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) according to [18] on Cell 1.

8.3.2.10.3.2 Test procedure sequence

Table 8.3.2.10.3.2-1 illustrates the downlink power levels to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions, while rows marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.2.10.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 19	Cell 20	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-60	-	-	Power levels shall be such that camping on Cell 1 is guaranteed.
	Îor/Ioc	dB	-	0	-15	
	Pilot Ec/ Ior	dB	-	-7	-7	
	Ioc	dBm/1.23 MHz	-	-75	-75	
	Pilot Ec/Io (Note 1)	dB	-	-10	-22	
T1	Cell-specific RS EPRE	dBm/15kHz	-60	-	-	
	Îor/Ioc	dB	-	0	0	
	Pilot Ec/ Ior	dB	-	-7	-7	
	Ioc	dBm/1.23 MHz	-	-75	-75	
	Pilot Ec/Io (Note 1)	dB	-	-10	-10	
T2	Cell-specific RS EPRE	dBm/15kHz	-60	-	-	
	Îor/Ioc	dB	-	-15	-0	
	Pilot Ec/ Ior	dB	-	-7	-7	
	Ioc	dBm/1.23 MHz	-	-75	-75	
	Pilot Ec/Io (Note 1)	dB	-	-22	-10	
Note 1: This parameter is not directly settable, but is derived by calculation from the other parameters set by the SS.						

Table 8.3.2.10.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionReconfiguration* message including measurementConfiguration to setup measurements and periodical reporting for 1xRTT cells.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RCConnectionReconfigrationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
2A	Wait and ignore *MeasurementReport* messages for 5 s to allow for detection and measurement of 1xRTT cells.	-	-	-	-
-	EXCEPTION: In parallel to the events described in steps 3 to 4, the steps specified in table 8.3.2.10.3.2-3 shall take place.	-	-	-	-
3	Wait for 30 s to ensure that the UE performs a periodical reporting of 1xRTT cells.	-	-	-	-
4	SS sets the cell-specific reference signal levels for Cell 1, Cell 19 and Cell 20 according to row "T1" in table 8.3.2.10.3.2-1.	-	-	-	-
5	Wait and ignore *MeasurementReport* messages for 5 s to allow for the switching of cells.	-	-	-	-
-	EXCEPTION: In parallel to the events described in steps 6 to 7, the steps specified in table 8.3.2.10.3.2-4 shall take place.	-	-	-	-
6	Wait for 30 s to ensure that the UE performs a periodical reporting of 1xRTT cells.	-	-	-	-
7	SS sets the cell-specific reference signal levels for Cell 1, Cell 19 and Cell 20 according to row "T2" in table 8.3.2.10.3.2-1.	-	-	-	-
8	Wait and ignore *MeasurementReport* messages for 5 s to allow for the switching of cells.	-	-	-	-
-	EXCEPTION: In parallel to the events described in steps 9 to 10, the steps specified in table 8.3.2.10.3.2-5 shall take place.	-	-	-	-
9	Wait for 30 s to ensure that the UE performs a periodical reporting of 1xRTT cells.	-	-	-	-
10	SS transmits an *RRCConnectionReconfiguration* message including measurementConfiguration to remove measId for periodic reporting.	<--	*RRCConnectionReconfiguration*	-	-
11	The UE transmits an *RCConnectionReconfigrationComplete* message	-->	*RRCConnectionReconfigurationComplete*	-	-
12	Wait for 30s for the UE so send a MeasurementReport.	-->	*MeasurementReport*	3	F

Table 8.3.2.10.3.2-3: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: Step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical intra frequency reporting for Cell 19?	-->	*MeasurementReport*	1	P

Table 8.3.2.10.3.2-4: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: Step 1 below shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical intra frequency reporting for Cell 19 and Cell 20?	-->	*MeasurementReport*	1, 2	P

Table 8.3.2.10.3.2-5: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
-	EXCEPTION: Step 1 shall be repeated every time the duration indicated in the IE *reportInterval* has elapsed.	-	-	-	-
1	Check: Does the UE transmit a *MeasurementReport* message to perform periodical intra frequency reporting for Cell 20?	-->	*MeasurementReport*	1, 2	P

8.3.2.10.3.3 Specific message contents

Table 8.3.2.10.3.3-1: RRCConnectionReconfiguration (step 1, Table 8.3.2.10.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.2.10.3.3-2: *MeasConfig* (step 1, Table 8.3.2.10.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f17		
measObject[2]	MeasObjectCDMA2000		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-f17		
reportConfig[1]	ReportConfigInterRAT-PERIODICAL		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f17		
reportConfigId[1]	IdReportConfig-f17		
}			
quantityConfig SEQUENCE {			
quantityConfigEUTRA	Not present		
quantityConfigUTRA	Not present		
quantityConfigGERAN	Not present		
quantityConfigCDMA2000 SEQUENCE {	Not present		
measQuantityCDMA2000	pilotStrength		
}			
}			
measGapConfig CHOICE {			
setup SEQUENCE {			
gapOffset CHOICE {			
gp1	30		
}			
}			
}			
}			
}			

Table 8.3.2.10.3.3-3: *MeasObjectCDMA2000* (step 1, Table 8.3.2.10.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1C			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectCDMA2000-GENERIC ::= SEQUENCE {			
cdma2000-Type	Type1XRTT		
CarrierFreqCDMA2000 SEQUENCE {			
bandClass	Band Class of frequency under test		
arfcn	f17		
}			
SearchWindowSize	15		
cellsToAddModList SEQUENCE (SIZE (1..maxCellMeas)) OF SEQUENCE {	Not present		
cellIndex [1]	1		
physCellId [1]	PhysicalCellIdentity of Cell 19		
cellIndex [2]	2		
physCellId [2]	PhysicalCellIdentity of Cell 20		
}			
}			

Table 8.3.2.10.3.3-3A: ReportConfigInterRAT-PERIODICAL-CDMA2000 (step 1, Table 8.3.2.10.3.2-2)

Derivation Path: 36.508 table 4.6.6-9 ReportConfigInterRAT-PERIODICAL			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-PERIODICAL ::= SEQUENCE {			
maxReportCells	2	Report Cell 19 and Cell 20	
}			

Table 8.3.2.10.3.3-4: RRCConnectionReconfiguration (step 10, Table 8.3.2.10.3.2-2)

Derivation path: 36.508 table 4.6.1-6			
Information Element	**Value/Remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
measurementConfiguration ::= SEQUENCE {			
measIdToRemoveList::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
}			
}			
}			
}			
}			
}			

Table 8.3.2.10.3.3-5: MeasurementReport (step 1, Table 8.3.2.10.3.2-3, Table 8.3.2.10.3.2-4, Table 8.3.2.10.3.2-5)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultsCDMA2000 :=SEQUENCE {			
preRegistrationStatusHRPD	FALSE		
measResultListCDMA2000 ::=SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE	1 or 2 entries		Table 8.3.2.10.3.2-3
{			1 entry
physCellId[1]	PhysicalCellIdentity of Cell 19		
cfg-Info[1]	Not present		
measResult[1] SEQUENCE {			
pilotStrength	(0..63)		
}			
}			
{			2 entries
physCellId[1]	PhysicalCellIdentity of Cell 19		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
pilotStrength	(0..62)		
}			
physCellId[2]	PhysicalCellIdentity of Cell 20		
cgi-Info[2]	Not present		
measResult[2] SEQUENCE {			
pilotStrength	(35..63)		
}			
}			
measResultListCDMA2000 ::=SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	2 entries	Cells can be reported in any order.	Table 8.3.2.10.3.2-4
physCellId[1]	PhysicalCellIdentity of Cell 19		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
pilotStrength	(0..63)		
}			
physCellId[2]	PhysicalCellIdentity of Cell 20		
cgi-Info[2]	Not present		
measResult[1] SEQUENCE {			
pilotStrength	(0..63)		
}			
}			
measResultListCDMA2000 ::=SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE	1 entry		Table 8.3.2.10.3.2-5
{			1 entry
physCellId[1]	PhysicalCellIdentity of Cell 20		
cgi-Info[1]	Not present		

measResult[1] SEQUENCE {			
pilotStrength	(0..63)		
}			
}			
{			2 entries
physCellId[1]	PhysicalCellIdentity of Cell 20		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
pilotStrength	(0..62)		
}			
physCellId[2]	PhysicalCellIdentity of Cell 19		
cgi-Info[2]	Not present		
measResult[2] SEQUENCE {			
pilotStrength	(35..63)		
}			
}			
}			
}			
}			
}			
}			
}			

8.3.2.11 Measurement configuration control and reporting / Inter-RAT Measurements / Event B1 / Measurement of UTRAN cells

8.3.2.11.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for UTRA cell and not detected entering condition for the event
B1 is met }
ensure that {
  when { UE detects entering condition for the event B1 is not met }
    then { UE does not transmit any MeasurementReport }
            }
```

(2)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for UTRA cell and not detected entering condition for the event
B1 is met }
ensure that {
  when { UE detects entering condition for the event B1 is met }
    then { UE transmits a MeasurementReport }
            }
```

(3)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for UTRA cell and detected entering condition for the event B1
is met }
ensure that {
  when { UE detects leaving condition for the event B1 is met }
    then { UE does not transmit any MeasurementReport }
            }
```

8.3.2.11.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.5.4.1, 5.5.4.8 and 5.5.5.

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the corresponding *reportConfig* includes a purpose set to '*reportStrongestCellsForSON*':

...

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

...

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the for this *measId*;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* :(a first cell triggers the event)

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

...

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *purpose is* included and set to '*reportCGI*' and if the UE acquired the information needed to set all fields of *cellGlobalId* for the requested cell:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> stop timer T321;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> upon expiry of the T321 for this *measId*:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

[TS 36.331, clause 5.5.4.7]

The UE shall:

1> for UTRA and CDMA2000, only trigger the event for cells included in the corresponding measurement object;

1> consider the entering condition for this event to be satisfied when condition B1-1, as specified below, is fulfilled;

1> consider the leaving condition for this event to be satisfied when condition B1-2, as specified below, is fulfilled;

Inequality B1-1 (Entering condition)

$Mn + Ofn - Hys > Thresh$

Inequality B1-2 (Leaving condition)

$Mn + Ofn + Hys < Thresh$

The variables in the formula are defined as follows:

Mn is the measurement result of the inter-RAT neighbour cell, not taking into account any offsets.

Ofn is the frequency specific offset of the frequency of the inter-RAT neighbour cell (i.e. *offsetFreq* as defined within the *measObject* corresponding to the frequency of the inter-RAT neighbour cell)

Hys is the hysteresis parameter for this event (i.e. hysteresis as defined within *reportConfigInterRAT* for this event)

Thresh is the threshold parameter for this event (i.e. b1-Threshold as defined within *reportConfigInterRAT* for this event)

Mn is expressed in dBm or dB, depending on the measurement quantity of the inter-RAT neighbour cell

Ofn, Hys are expressed in dB

Thresh is expressed in the same unit as ***Mn***

[TS 36.331, clause 5.5.5]

The purpose of this procedure is to transfer measurement results from the UE to E-UTRAN.

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*

3> else*:*

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells* include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

...

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of decreasing quantity, i.e. the best cell is included first;

...

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

1> else:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasReportList* for this *measId*;

3> remove this *measId* from the *measIdList* within *VarMeasConfig*;

1> if the measured results are for CDMA2000 HRPD:

2> set the *preRegistrationStatusHRPD* to the UE's CDMA2000 upper layer's HRPD *preRegistrationStatus*;

1> if the measured results are for CDMA2000 1xRTT:

2> set the *preRegistrationStatusHRPD* to '*FALSE*';

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.2.11.3 Test description

8.3.2.11.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 7.
- System information combination 4 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.2.11.3.2 Test procedure sequence

Table 8.3.2.3.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after preamble, while columns marked "T1" and "T2" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.2.11.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 7	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-60	-	The power level values are such that entering conditions for event B1 are not satisfied.
	CPICH Ec= (UTRA FDD)	dBm/3.84MHz	-	-88	
	PCCPCH Ec (UTRA LCR TDD)	dBm/1.28 MHz	-	-88	
T1	Cell-specific RS EPRE	dBm/15kHz	-84	-	The power level values are such that entering conditions for event B1 are satisfied.
	CPICH Ec= (UTRA FDD)	dBm/3.84MHz	-	-64	
	PCCPCH Ec (UTRA LCR TDD)	dBm/1.28 MHz	-	-64	
T2	Cell-specific RS EPRE	dBm/15kHz	-60	-	The power level values are such that leaving conditions for event B1 are satisfied.
	CPICH Ec= (UTRA FDD)	dBm/3.84MHz	-	-88	
	PCCPCH Ec (UTRA LCR TDD)	dBm/1.28 MHz	-	-88	

Table 8.3.2.11.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup inter RAT measurement on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message to confirm the setup of inter RAT measurement on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 to report the event B1 during the next 10s?	-->	*MeasurementReport*	1	F
4	The SS changes Cell 7 parameters according to the row "T1" in table 8.3.2.11.3.2-1.	-	-	-	-
5	Check: Does the UE transmit a *MeasurementReport* message to report the event B1 for Cell 7?	-->	*MeasurementReport*	2	P
6	The SS changes Cell 7 parameters according to the row "T2" in table 8.3.2.11.3.2-1.	-	-	-	-
7	Wait and ignore *MeasurementReport* messages for 15 s to allow change of power levels and UE measurement for Cell 7.	-	-	-	-
8	Check: Does the UE transmit a *MeasurementReport* message on Cell 1 to report the event B1 during the next 10s?	-->	*MeasurementReport*	3	F
9	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicate that the UE is in E-UTRA RRC_CONNECTED state on Cell 1?	-	-	1,2, 3	-

8.3.2.11.3.3 Specific message contents

Table 8.3.2.11.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.3.2.11.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition MEAS

Table 8.3.2.11.3.3-2: *MeasConfig* (Table 8.3.2.11.3.3-1)

Derivation Path: 36.508, Table 4.6.6-1, condition UTRAN			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f8		
measObject[2]	MeasObjectUTRA-f8		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-B1-UTRA		
reportConfig[1]	ReportConfigInterRAT-B1-UTRA(-76)		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f8		
reportConfigId[1]	IdReportConfig-B1-UTRA		
}			
}			

Table 8.3.2.11.3.3-3: *QuantityConfig* (Table 8.3.2.11.3.3-1)

Derivation Path: 36.508, Table 4.6.6-3A, condition UTRAN			
Information Element	**Value/remark**	**Comment**	**Condition**
QuantityConfig SEQUENCE {			
quantityConfigUTRA SEQUENCE {			
measQuantityUTRA-FDD	cpich-RSCP		UTRA-FDD
measQuantityUTRA-TDD	pccpch-RSCP		UTRA-TDD
filterCoefficient	fc0		
}			
}			

Condition	Explanation
UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

Table 8.3.2.11.3.3-4: MeasObjectUTRA-f8 (Table 8.3.2.11.3.3-2)

Derivation path: 36.508 table 4.6.6-3 MeasObjectUTRA-GENERIC(f8)			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasObjectUTRA-GENERIC(f8) ::= SEQUENCE {			
carrierFreq	UTRA DL carrier frequency of the cell 7		
cellsToAddModList CHOICE {			
cellsToAddModListUTRA-FDD ::= SEQUENCE (SIZE (1.. maxCellMeas)) OF SEQUENCE {			UTRA-FDD
cellIndex [1]	1		
physCellId [1]	physicalCellIdentity – Cell 7		
}			
cellsToAddModListUTRA-TDD ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {			UTRA-TDD
cellIndex [1]	1		
physCellId [1]	physicalCellIdentity – Cell 7		
}			
}			
}			

Condition	Explanation
UTRA-FDD	UTRA-FDD cell environment
UTRA-TDD	UTRA-TDD cell environment

Table 8.3.2.11.3.3-5: *ReportConfigInterRAT-B1-UTRA* (Table 8.3.2.11.3.3-2)

Derivation path: 36.508, Table 4.6.6-7B ReportConfigInterRAT-B1-UTRA(-18)			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-B1-UTRA(UTRA-Thres) ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
timeToTrigger	ms0		
}			
}			
reportAmount	infinity		
}			

Condition	Explanation
UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

Table 8.3.2.11.3.3-6: *MeasurementReport* (step 5, Table 8.3.2.11.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 7		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
utra-RSCP	(-5..91)		
}			
}			
}			
}			
}			
}			
}			
}			

Condition	Explanation
UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

8.3.3 Measurements for self optimized networks

8.3.3.1 Measurement configuration control and reporting / SON / ANR / CGI reporting of E-UTRAN cell

8.3.3.1.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { Neighbour becomes offset better than serving }
   then { UE sends MeasurementReport for event A3 }
}
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE is commanded to report the global cell identity of the neighbour cell }
   then { UE determines the global cell identity of the cell included in the associated measurement
object by acquiring the relevant system information from the concerned cell and reports the global
cell identity in the MeasurementReport }
}
```

8.3.3.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.2.3, 5.5.3.1, 5.5.4.1 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> If the RRCConnectionReconfiguration message includes the *measConfig*:

2> perform the Measurement configuration procedure as specified in 5.5.2;

...

[TS 36.331, clause 5.5.2.3]

The UE shall:

...

The UE shall:

1> for each *measId* included in the received *measIdToAddModList*:

2> if an entry with the matching *measId* exists in the *measIdList* within the *VarMeasConfig*:

3> replace the entry with the value received for this *measId*;

2> else:

3> add a new entry for this *measId* within the *VarMeasConfig* ;

2> remove the measurement reporting entry for this *measId* from the *VarMeasReportList*, if included;

2> stop the periodical reporting timer or timer T321, whichever one is running, and reset the associated information (e.g. *timeToTrigger*) for this *measId*;

2> if the *triggerType* is set to '*periodical*' and the *purpose* is set to '*reportCGI*' in the *reportConfig* associated with this *measId*:

3> if the *measObject* associated with this *measId* concerns E-UTRA:

4> start timer T321 with the timer value set to 1 second for this *measId*;

3> else:

4> start timer T321 with the timer value set to 8 seconds for this *measId*;

[TS 36.331, clause 5.5.3.1]

The UE supports measurements using a reporting configuration with the *purpose* set to '*reportCGI*', if the network provides sufficient idle periods.

The UE applies the layer 3 filtering as specified in 5.5.3.2, before using the measured results for evaluation of reporting criteria or for measurement reporting.

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if a measurement gap configuration is setup; or

2> the UE does not require measurement gaps to perform the concerned measurement:

3> if *s-Measure* is not configured; or

3> if *s-Measure* is configured and the serving cell RSRP, after layer 3 filtering, is lower than this value; or

3> if the *purpose* for the associated *reportConfig* is set to '*reportCGI*':

4> perform the corresponding measurements of neighbouring cells on the frequencies and RATs indicated in the concerned *measObject*;

2> perform the evaluation of reporting criteria as specified in section 5.5.4;

1> if a *measId* is configured for which the *purpose* within the associated *reportConfig* is set to '*reportCGI*':

2> try to acquire the global cell identity of the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* by acquiring the relevant system information from the concerned cell;

2> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is an E-UTRAN cell:

3> try to acquire the list of additional PLMN Identities, as included in the *plmn-IdentityList*, if multiple PLMN identities are broadcast in the concerned cell;

NOTE: The 'primary' PLMN is part of the global cell identity.

2> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a UTRAN cell:

3> try to acquire the LAC, the RAC and the list of additional PLMN Identities, if multiple PLMN identities are broadcast in the concerned cell;

2> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a GERAN cell:

3> try to acquire the RAC in the concerned cell;

2> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a CDMA2000 cell and the *cdma2000-Type* included in the *measObject* is '*typeHRPD*':

3> try to acquire the Sector ID in the concerned cell;

2> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a CDMA2000 cell and the *cdma2000-Type* included in the *measObject* is '*type1XRTT*':

3> try to acquire the BASE ID, SID and NID in the concerned cell;

...

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the corresponding *reportConfig* includes a purpose set to '*reportStrongestCellsForSON*':

3> consider any neighbouring cell detected on the associated frequency to be applicable;

2> else if the corresponding *reportConfig* includes a purpose set to '*reportCGI*':

3> consider any neighbouring cell detected on the associated frequency/ set of frequencies (GERAN) which has a physical cell identity matching the value of the *cellForWhichToReportCGI* included in the corresponding *measObject* within the *VarMeasConfig* to be applicable;

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the *VarMeasConfig* for this *measId*;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *purpose is* included and set to '*reportCGI*' and if the UE acquired the information needed to set all fields of *cgi-Info* for the requested cell:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> stop timer T321;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> upon expiry of the T321 for this *measId*:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

NOTE 3: If the UE is configured with DRX, the UE may delay the measurement reporting for event triggered and periodical triggered measurements until the Active Time, which is defined in TS 36.321 [6].

[TS 36.331, clause 5.5.5]

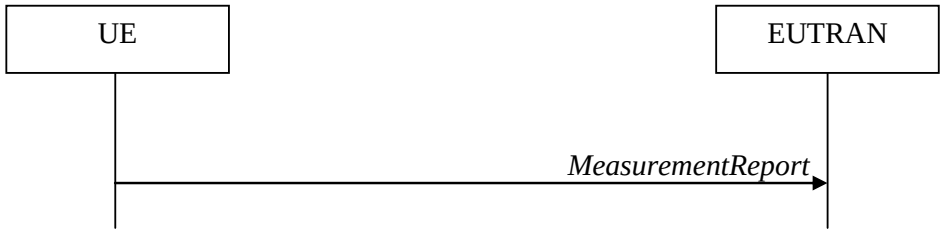

Figure 5.5.5-1: Measurement reporting

The purpose of this procedure is to transfer measurement results from the UE to E-UTRAN.

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of decreasing quantity, i.e. the best cell is included first;

3> else if the *purpose* is set to '*reportCGI*':

4> if the mandatory present fields of the *cgi-Info* for the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* have been obtained:

5> include the *cgi-Info* containing all the fields that have been successfully acquired;

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

1> else:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasReportList* for this *measId*;

3> remove this *measId* from the *measIdList* within *VarMeasConfig*;

1> if the measured results are for CDMA2000 HRPD:

2> set the *preRegistrationStatusHRPD* to the UE's CDMA2000 upper layer's HRPD *preRegistrationStatus*;

1> if the measured results are for CDMA2000 1xRTT:

2> set the *preRegistrationStatusHRPD* to '*FALSE*';

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

...

8.3.3.1.3 Test description

8.3.3.1.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 2

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.3.1.3.2 Test procedure sequence

Table 8.3.3.1.3.2-1 illustrates the downlink power levels to be applied for Cell 1 and Cell 2 at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while row marked "T1" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.3.1.3.2-1: Power levels

	Parameter	Unit	Cell 1	Cell 2 (DL only)	Remark
T0	Cell-specific RS EPRE	dBm/ 15kHz	-85	-91	Power levels shall be such that entry condition for event A3 is not satisfied: $Mn+Ofn+Ocn+Hys < Ms+Ofs+Ocs+Off$
T1	Cell-specific RS EPRE	dBm/ 15kHz	-85	-79	Power levels shall be such that entry condition for event A3 is satisfied: $Mn+Ofn+Ocn-Hys > Ms+Ofs+Ocs+Off$

Table 8.3.3.1.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup intra LTE measurement and reporting for event A3 (intra frequency measurement) and set *timeAlignmentTimerDedicated* to *infinity*.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigrationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.3.1.3.2-1.	-	-	-	-
4	Check: Does the UE transmit a *MeasurementReport* message to report event A3 with the measured RSRP value for Cell 2?	-->	*MeasurementReport*	1	P
5	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* including *reportCGI* for Cell 2 and sufficient idle periods for UE to acquire the relevant system information from Cell 2.	<--	*RRCConnectionReconfiguration*	-	-
6	The UE transmits an *RRCConnectionReconfigrationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
7	Check: Does the UE transmit a *MeasurementReport* message with *cellGlobalId* of Cell 2 within 1 sec.	-->	*MeasurementReport*	2	P

8.3.3.1.3.3 Specific message contents

Table 8.3.3.1.3.3-1: *SystemInformationBlockType2* for Cell 1 (preamble and all the steps in Table 8.3.3.1.3.2-2)

Derivation Path: 36.508 clause 4.4.3.3-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType2 ::= SEQUENCE {			
RadioResourceConfigCommonSIB-DEFAULT ::= SEQUENCE {			
pcch-Config	PCCH-Config-LONGCYCLE		
}			
PCCH-Config-LONGCYCLE::= SEQUENCE {			
defaultPagingCycle	rf256		
nB	oneT		
}			
}			

Table 8.3.3.1.3.3-1A: *SystemInformationBlockType1* for Cell 2 (preamble and all steps, Table 8.3.3.1.3.2-2)

Derivation Path: 36.508 Table 4.4.3.2-3			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType1 ::= SEQUENCE {			
cellAccessRelatedInfo SEQUENCE {			
plmn-IdentityList SEQUENCE (SIZE (1..6)) OF SEQUENCE {	2 entries		
plmn-Identity[1] SEQUENCE {			
mcc	See Table 8.3.3.1.3.3-1B		
mnc	See Table 8.3.3.1.3.3-1B		
}			
cellReservedForOperatorUse[1]	notReserved		
plmn-Identity[2] SEQUENCE {			
mcc	See Table 8.3.3.1.3.3-1B		
mnc	See Table 8.3.3.1.3.3-1B		
}			
cellReservedForOperatorUse[2]	notReserved		
}			
}			
}			

The PLMN Identity list broadcasted on the BCCH in Cell 2 shall be configured as defined in the table below.

Table 8.3.3.1.3.3-1B: PLMN Identity List broadcasted for Cell 2

Cell	PLMN Identity (1)		PLMN Identity (2)	
	MCC digits	MNC digits	MCC digits	MNC digits
2	PLMN 1	PLMN 1	PLMN 2	PLMN 2

The definition of each PLMN code is found in table below.

PLMN	MCC digit			MNC digit		
	1	2	3	1	2	3
1	0	0	1	0	1	-
2	0	0	1	0	2	-

NOTE: "–" (dash) denotes "not present"

Table 8.3.3.1.3.3-2: *RRCConnectionReconfiguration* (step 1, Table 8.3.3.1.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated ::= SEQUENCE {			
srb-ToAddModList	Not present		
drb-ToAddModList	Not present		
drb-ToReleaseList	Not present		
mac-MainConfig CHOICE {			
explicitValue SEQUENCE {			
ul-SCH-Config	Not present		
drx-Config	Not present		
timeAlignmentTimerDedicated	infinity		
phr-Config	Not present		
}			
}			
sps-Config	Not present		
physicalConfigDedicated	Not present		
}			

Table 8.3.3.1.3.3-3 *MeasConfig* (step 1, Table 8.3.3.1.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measIdToAddModList ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3		
}			
measObjectToAddModList ::= SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
}			
reportConfigToAddModList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfig-A3-H		
}			
}			

Table 8.3.3.1.3.3-4 ReportConfig-A3-H (step 1, Table 8.3.3.1.3.2-2)

Derivation path: 36.508 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 {			
}			
}			
timeToTrigger	ms0		
}			
}			
reportQuantity	sameAsTriggerQuantity		
}			

Table 8.3.3.1.3.3-5 *MeasurementReport* (step 4, Table 8.3.3.1.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 2	
physCellId	PhysCellId of the Cell 2.		
cgi-Info	Not present		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
}			
}			
}			

Table 8.3.3.1.3.3-6: *RRCConnectionReconfiguration* (step 5, Table 8.3.3.1.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
radioResourceConfigDedicated	RadioResourceConfigDedicated-DRX		
}			

Table 8.3.3.1.3.3-7 *MeasConfig* (step 5, Table 8.3.3.1.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measIdToAddModList ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	2		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	ReportConfigId-CGI		
}			
measObjectToAddModList ::= SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-CGI		
}			
reportConfigToRemoveList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {			
reportConfigId	IdReportConfig-A3		
}			
reportConfigToAddModList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	ReportConfigId-CGI		
reportConfig[1]	ReportConfig-CGI		
}			
}			

Table 8.3.3.1.3.3-8: MeasObjectEUTRA-CGI (step 5, Table 8.3.3.1.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-CGI ::= SEQUENCE {			
carrierFreq SEQUENCE {}	Downlink EARFCN for f1		
cellForWhichToReportCGI	PhysCellId of the Cell 2.		
}			

Table 8.3.3.1.3.3-9: ReportConfig-CGI (step 5, Table 8.3.3.1.3.2-2)

Derivation Path: 36.508, Table 4.6.6-7			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose CHOICE {			
reportCGI	NULL		
}			
}			
reportQuantity	sameAsTriggerQuantity		
reportAmount	r1		
}			

Table 8.3.3.1.3.3-10: RadioResourceConfigDedicated-DRX (step 5, Table 8.3.3.1.3.2-2)

Derivation Path: 36.508 clause 4.6.3.19			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated-DRX ::= SEQUENCE {			
mac-MainConfig CHOICE {			
explicitValue SEQUENCE {			
ul-SCH-Config SEQUENCE {			
maxHARQ-Tx	n5		
periodicBSR-Timer	infinity		
retxBSR-Timer	sf10240		
ttiBundling	FALSE		
}			
drx-Config CHOICE {			
setup SEQUENCE {			
onDurationTimer	psf6		
drx-InactivityTimer	psf60		
drx-RetransmissionTimer	sf16		
longDRX-CycleStartOffset CHOICE {			
sf1280	4		
}			
shortDRX	Not present		
}			
}			
timeAlignmentTimerDedicated	infinity		
phr-Config CHOICE {			
release	NULL		
}			
}			
}			
physicalConfigDedicated	Not present		
}			

Table 8.3.3.1.3.3-11: *MeasurementReport* (step 7, Table 8.3.3.1.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysCellId of Cell 2		
cgi-Info[1] SEQUENCE {			
cellGlobalId	cellGlobalIdof formed from the first entry in 'plmn-IdentityList' and 'cellIdentity' Cell 2		
trackingAreaCode	trackingAreaCode of Cell 2		
plmn-IdentityList {}	List of identities starting from the second entry of plmn-IdentityList of Cell 2		
}			
measResult[1] SEQUENCE {			
rsrpResult	Not present		
rsrqResult	Not present		
}			
}			
}			
}			
}			
}			
}			

8.3.3.2 Measurement configuration control and reporting / SON / ANR / CGI reporting of UTRAN cell

8.3.3.2.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and measurement configured for periodic reporting of UTRA
cells with the purpose of SON }
ensure that {
  when { The UE receives reference signal power for cells on the UTRA frequency where measurements
are configured }
   then { UE sends MeasurementReport message at regular intervals for these UTRA cells }
}
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE is commanded to report the global cell identity of the inter-RAT(UTRAN) neighbour cell }
   then { UE determines the global cell identity of the inter-RAT(UTRAN) cell included in the
associated measurement object by acquiring the relevant system information from the concerned cell
and reports the global cell identity in the MeasurementReport message}
}
```

8.3.3.2.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.2.3, 5.5.3, 5.5.4.1and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> if the RRCConnectionReconfiguration message includes the measConfig:

2> perform the measurement configuration procedure as specified in 5.5.2;

...

[TS 36.331, clause 5.5.2.3]

The UE shall:

...

2> if the *triggerType* is set to '*periodical*' and the *purpose* is set to '*reportCGI*' in the *reportConfig* associated with this *measId*:

3> if the *measObject* associated with this *measId* concerns E-UTRA:

4> start timer T321 with the timer value set to 1 second for this *measId*;

3> else:

4> start timer T321 with the timer value set to 8 seconds for this *measId*;

[TS 36.331, clause 5.5.3]

The UE supports measurements using a reporting configuration with the *purpose* set to '*reportCGI*', if the network provides sufficient idle periods.

The UE applies the layer 3 filtering as specified in 5.5.3.2, before using the measured results for evaluation of reporting criteria or for measurement reporting.

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if a measurement gap configuration is setup; or

2> the UE does not require measurement gaps to perform the concerned measurement:

3> if *s-Measure* is not configured; or

3> if *s-Measure* is configured and the serving cell RSRP, after layer 3 filtering, is lower than this value; or

3> if the *purpose* for the associated *reportConfig* is set to '*reportCGI*':

4> perform the corresponding measurements of neighbouring cells on the frequencies and RATs indicated in the concerned *measObject*;

2> perform the evaluation of reporting criteria as specified in section 5.5.4;

1> if a *measId* is configured for which the *purpose* within the associated *reportConfig* is set to '*reportCGI*':

…

2> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a UTRAN cell:

3> try to acquire the LAC, the RAC and the list of additional PLMN Identities, if multiple PLMN identities are broadcast in the concerned cell;

...

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the corresponding *reportConfig* includes a purpose set to '*reportStrongestCellsForSON*':

3> consider any neighbouring cell detected on the associated frequency to be applicable;

2> else if the corresponding *reportConfig* includes a purpose set to '*reportCGI*':

3> consider any neighbouring cell detected on the associated frequency/ set of frequencies (GERAN) which has a physical cell identity matching the value of the *cellForWhichToReportCGI* included in the corresponding *measObject* within the *VarMeasConfig* to be applicable;

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

…

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

3> else if the corresponding *measObject* concerns GERAN:

…

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *purpose is* included and set to '*reportCGI*' and if the UE acquired the information needed to set all fields of *cgi-Info* for the requested cell:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> stop timer T321;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> upon expiry of the T321 for this *measId*:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

NOTE 3: If the UE is configured with DRX, the UE may delay the measurement reporting for event triggered and periodical triggered measurements until the Active Time, which is defined in TS 36.321 [6].

[TS 36.331, clause 5.5.5]

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of decreasing quantity, i.e. the best cell is included first;

3> else if the *purpose* is set to '*reportCGI*':

4> if the mandatory present fields of the *cgi-Info* for the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* have been obtained:

5> include the *cgi-Info* containing all the fields that have been successfully acquired;

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

1> else:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasReportList* for this *measId*;

3> remove this *measId* from the *measIdList* within *VarMeasConfig*;

…

8.3.3.2.3 Test description

8.3.3.2.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 5.
- System information combination 4 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.3.2.3.2 Test procedure sequence

Table 8.3.3.2.3.2-1 illustrates the downlink power levels to be applied for cells at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while row marked "T1" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.3.2.3.2-1: Time instance of cell power levels

	Parameter	Unit	Cell 1	Cell 5	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-80	-	
	CPICH_Ec	dBm/3.84MHz	-	Off	For Cell 5 is a UTRA FDD Cell
	P-CCPCH	dBm/1.28 MHz		Off	For Cell 5 is a UTRA TDD Cell
T1	Cell-specific RS EPRE	dBm/15kHz	-60	-	
	CPICH_Ec	dBm/3.84MHz	-	-75	For Cell 5 is a UTRA FFDD Cell
	P-CCPCH	dBm/1.28 MHz		-78	For Cell 5 is a UTRA TDD Cell

Table 8.3.3.2.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup inter RAT measurement for the purpose of SON and set *timeAlignmentTimerDedicated* to *infinity*.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigrationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 5 power level according to the row "T1" in table 8.3.3.2.3.2-1.	-	-	-	-
4	Check: Does the UE transmit a *MeasurementReport* message to report the measured result for Cell 5?	-->	*MeasurementReport*	1	P
5	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* including *reportCGI* for Cell 5 and sufficient idle periods for UE to acquire the relevant system information from Cell 5.	<--	*RRCConnectionReconfiguration*	-	-
6	The UE transmits an *RRCConnectionReconfigrationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
7	Check: Does the UE transmit a *MeasurementReport* message with *cellGlobalId* of Cell 5 within 8 sec?	-->	*MeasurementReport*	2	P

8.3.3.2.3.3 Specific message contents

Table 8.3.3.2.3.3-1: *SystemInformationBlockType2* for Cell 1 (preamble and all the steps in Table 8.3.3.2.3.2-2)

Derivation Path: 36.508 clause 4.4.3.3-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType2 ::= SEQUENCE {			
RadioResourceConfigCommonSIB-DEFAULT ::= SEQUENCE {			
pcch-Configuration	PCCH-Configuration-LONGCYCLE		
}			
PCCH-Configuration-LONGCYCLE::= SEQUENCE {			
defaultPagingCycle	rf256		
}			
}			

Table 8.3.3.2.3.3-1A: Master Information Block for Cell 5 (preamble and all the steps in Table 8.3.3.2.3.2-2)

Derivation Path: 34.108 clause 6.1.0a.3			
Information Element	**Value/remark**	**Comment**	**Condition**
MasterInformationBlock ::= SEQUENCE {			
plmn-Type ::= CHOICE {			
gsm-MAP SEQUENCE {			
plmn-Identity SEQUENCE {			
mcc	See Table 8.3.3.2.3.3-1B	(SIZE (3)) OF Digit	
mnc	See Table 8.3.3.2.3.3-1B	(SIZE (2..3)) OF Digit	
}			
}			
}			
v690NonCriticalExtensions SEQUENCE {			
masterInformationBlock-v690ext SEQUENCE {			
multiplePLMN-List SEQUENCE {			
mibPLMN-Identity	TRUE		
multiplePLMNs SEQUENCE (SIZE (1..5)) OF SEQUENCE {	1 entry		
mcc	See Table 8.3.3.2.3.3-1B	(SIZE (3)) OF Digit	
mnc	See Table 8.3.3.2.3.3-1B	(SIZE (2..3)) OF Digit	
}			
}			
}			
}			
}			

The MIB PLMN Identity and PLMN codes broadcasted on the BCCH in Cell 5 shall be configured as defined in the table below.

Cell	MIB PLMN Identity	PLMN Identity		Multiple PLMNs (1)	
		MCC digits	MNC digits	MCC digits	MNC digits
5	TRUE	PLMN 3	PLMN 3	PLMN 2	PLMN 2

Table 8.3.3.2.3.3-1B: PLMN Identity List broadcasted for Cell 5

The definition of each PLMN code is found in table below.

PLMN	MCC digit			MNC digit		
	1	2	3	1	2	3
1	0	0	1	0	1	-
2	0	0	1	0	2	-
3	0	0	1	0	3	-

NOTE: "–" (dash) denotes "not present"

Table 8.3.3.2.3.3-1C: System Information Block type 1 for Cell 5 (preamble and all the steps in Table 8.3.3.2.3.2-2)

Derivation Path: 34.108 clause 6.1.0b with Condition A1 "UTRAN cell environment"

Table 8.3.3.2.3.3-1D: System Information Block type 3 (FDD) for Cell 5 (preamble and all the steps in Table 8.3.3.2.3.2-2)

Derivation Path: 34.108 clause 6.1.0b

Table 8.3.3.2.3.3-2: *RRCConnectionReconfiguration* (step 1, Table 8.3.3.2.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated ::= SEQUENCE {			
srb-ToAddModList	Not present		
drb-ToAddModList	Not present		
drb-ToReleaseList	Not present		
mac-MainConfig CHOICE {			
explicitValue SEQUENCE {			
ul-SCH-Config	Not present		
drx-Config	Not present		
timeAlignmentTimerDedicated	infinity		
phr-Config	Not present		
}			
}			
sps-Config	Not present		
physicalConfigDedicated	Not present		
}			

Table 8.3.3.2.3.3-3 *MeasConfig* (step 1, Table 8.3.3.2.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1 condition UTRAN			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f8		
measObject[2]	MeasObjectUTRA-f8	UTRA frequency	
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-P-UTRA		
reportConfig[1]	ReportConfigInterRAT-P-UTRA		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f8		
reportConfigId[1]	IdReportConfig-P-UTRA		
}			
quantityConfig SEQUENCE {			
quantityConfigUTRA SEQUENCE {			
measQuantityUTRA-FDD	cpich-RSCP		UTRA-FDD
measQuantityUTRA-TDD	pccpch-RSCP		UTRA-TDD
filterCoefficient	fc0		
}			
}			

Condition	Explanation
UTRA-FDD	UTRA-FDD cell environment
UTRA-TDD	UTRA-TDD cell environment

Table 8.3.3.2.3.3-4 MeasObjectUTRA-f8 (step 1, Table 8.3.3.2.3.2-2)

Derivation path: 36.508 table 4.6.6-3 MeasObjectUTRA-GENERIC(f8)			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasObjectUTRA-GENERIC(f8) ::= SEQUENCE {			
carrierFreq	UTRA DL carrier frequency of the cell 5		
cellsToAddModList CHOICE {			
cellsToAddModListUTRA-FDD ::= SEQUENCE (SIZE (1.. maxCellMeas)) OF SEQUENCE {			UTRA-FDD
cellIndex [1]	1		
physCellId [1]	physicalCellIdentity – Cell 5		
}			
cellsToAddModListUTRA-TDD ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {			UTRA-TDD
cellIndex [1]	1		
physCellId [1]	physicalCellIdentity – Cell 5		
}			
}			
}			

Condition	Explanation
UTRA-FDD	UTRA-FDD cell environment
UTRA-TDD	UTRA-TDD cell environment

Table 8.3.3.2.3.3-5: ReportConfigInterRAT-P-UTRA (step 1, Table 8.3.2.3.3.2-2)

Derivation Path: 36.508, Table 4.6.6-9 ReportConfigInterRAT-PERIODICAL			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-PERIODICAL ::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose CHOICE {			
reportStrongestCellsForSON	NULL		
}			
}			
}			
reportAmount	r1		
}			

Table 8.3.3.2.3.3-6 *MeasurementReport* (step 4, Table 8.3.3.2.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry	Report Cell 5	
physCellId	PhysicalCellIdentity of the Cell 5.		
cgi-Info	Not present		
measResult SEQUENCE{			
utra-RSCP	(-5..91)		
}			
}			
}			
}			
}			
}			
}			

Condition	Explanation
UTRA-FDD	UTRA-FDD cell environment
UTRA-TDD	UTRA-TDD cell environment

Table 8.3.3.2.3.3-7: *RRCConnectionReconfiguration* (step 5, Table 8.3.3.2.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
radioResourceConfiguration	RadioResourceConfigDedicated-DRX		
}			

Table 8.3.3.2.3.3-8 *MeasConfig* (step 5, Table 8.3.3.2.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f8		
measObject[1]	MeasObjectUTRA-CGI		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	ReportConfigId-CGI		
reportConfig[1]	ReportConfigUTRA-CGI		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	2		
measObjectId[1]	IdMeasObject-f8		
reportConfigId[1]	ReportConfigId-CGI		
}			
}			

Table 8.3.3.2.3.3-9: MeasObjectUTRA-CGI (step 5, Table 8.3.3.2.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-3			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectUTRA-CGI ::= SEQUENCE {			
carrierFreq	Downlink UARFCN of f8		
cellForWhichToReportCGI	PhysicalCellIdentity of the Cell 5.		
}			

Table 8.3.3.2.3.3-10: ReportConfigUTRA-CGI (step 5, Table 8.3.3.2.3.2-2)

Derivation Path: 36.508, Table 4.6.6-9 ReportConfigInterRAT-PERIODICAL			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-PERIODICAL ::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose CHOICE {			
reportCGI	NULL		
}			
}			
}			
reportAmount	r1		
}			

Table 8.3.3.2.3.3-11: RadioResourceConfigDedicated-DRX (step 5, Table 8.3.3.2.3.2-2)

Derivation Path: 36.508 clause 4.6.3.19			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated-DRX ::= SEQUENCE {			
mac-MainConfig CHOICE {			
explicitValue SEQUENCE {			
ul-SCH-Config SEQUENCE {			
maxHARQ-Tx	n5		
periodicBSR-Timer	infinity		
retxBSR-Timer	sf10240		
ttiBundling	FALSE		
}			
drx-Config CHOICE {			
setup SEQUENCE {			
onDurationTimer	psf6		
drx-InactivityTimer	psf60		
drx-RetransmissionTimer	sf16		
longDRX-CycleStartOffset CHOICE {			
sf2560	4		
}			
shortDRX	Not present		
}			
}			
timeAlignmentTimerDedicated	infinity		
phr-Config CHOICE {			
release	NULL		
}			
}			
}			
physicalConfigDedicated	Not present		
}			

Table 8.3.3.2.3.3-12: *MeasurementReport* (step 7, Table 8.3.3.2.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 5		
cgi-Info[1] SEQUENCE {			
cellGlobalId	cellGlobalId formed from 'PLMN Identity' and 'Cell identity' of Cell 5		
locationAreaCode	locationAreaCode of Cell 5		
routingAreaCode	routingAreaCode of Cell 5		
plmn-IdentityList	'Multiple PLMN List' of Cell 5		
}			
measResult[1] SEQUENCE {			
utra-RSCP	Not Checked		
}			
}			
}			
}			
}			
}			
}			
}			

Condition	Explanation
UTRA-FDD	UTRA-FDD cell environment
UTRA-TDD	UTRA-TDD cell environment

8.3.3.3 Measurement configuration control and reporting / SON / ANR / CGI reporting of GERAN cell

8.3.3.3.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment, initial security activation procedure and
performed the inter RAT measurement for GERAN cell and not detected entering condition for the event
B2 is met }
ensure that {
  when { UE detects entering condition for the event B2 is met }
    then { UE transmits a MeasurementReport }
            }
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE is commanded to report the global cell identity of the inter-RAT(GERAN) neighbour cell }
```

then { UE determines the global cell identity of the inter-RAT(GERAN) cell included in the associated measurement object by acquiring the relevant system information from the concerned cell and reports the global cell identity in the *MeasurementReport* }
}

8.3.3.3.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.2.3, 5.5.3, 5.5.4.1 and 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

...

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

[TS 36.331, clause 5.5.2.3]

The UE shall:

...

2> if the *triggerType* is set to '*periodical*' and the *purpose* is set to '*reportCGI*' in the *reportConfig* associated with this *measId*:

3> if the *measObject* associated with this *measId* concerns E-UTRA:

4> start timer T321 with the timer value set to 1 second for this *measId*;

3> else:

4> start timer T321 with the timer value set to 8 seconds for this *measId*;

[TS 36.331, clause 5.5.3]

The UE supports measurements using a reporting configuration with the *purpose* set to '*reportCGI*', if the network provides sufficient idle periods.

The UE applies the layer 3 filtering as specified in 5.5.3.2, before using the measured results for evaluation of reporting criteria or for measurement reporting.

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if a measurement gap configuration is setup; or

2> the UE does not require measurement gaps to perform the concerned measurement:

3> if *s-Measure* is not configured; or

3> if *s-Measure* is configured and the serving cell RSRP, after layer 3 filtering, is lower than this value; or

3> if the *purpose* for the associated *reportConfig* is set to '*reportCGI*':

4> perform the corresponding measurements of neighbouring cells on the frequencies and RATs indicated in the concerned *measObject*;

2> perform the evaluation of reporting criteria as specified in section 5.5.4;

1> if a *measId* is configured for which the *purpose* within the associated *reportConfig* is set to '*reportCGI*':

2> try to acquire the global cell identity of the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* by acquiring the relevant system information from the concerned cell;

2> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is an E-UTRAN cell:

3> try to acquire the list of additional PLMN Identities, as included in the *plmn-IdentityList*, if multiple PLMN identities are broadcast in the concerned cell;

NOTE: The 'primary' PLMN is part of the global cell identity.

2> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a UTRAN cell:

3> try to acquire the LAC, the RAC and the list of additional PLMN Identities, if multiple PLMN identities are broadcast in the concerned cell;

2> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a GERAN cell:

3> try to acquire the RAC in the concerned cell;

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the corresponding *reportConfig* includes a purpose set to '*reportStrongestCellsForSON*':

3> consider any neighbouring cell detected on the associated frequency to be applicable;

2> else if the corresponding *reportConfig* includes a purpose set to '*reportCGI*':

3> consider any neighbouring cell detected on the associated frequency/ set of frequencies (GERAN) which has a physical cell identity matching the value of the *cellForWhichToReportCGI* included in the corresponding *measObject* within the *VarMeasConfig* to be applicable;

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

…

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the *VarMeasConfig* for this *measId*;

...

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *purpose is* included and set to '*reportCGI*' and if the UE acquired the information needed to set all fields of *cgi-Info* for the requested cell:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> stop timer T321;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> upon expiry of the T321 for this *measId*:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

NOTE 3: If the UE is configured with DRX, the UE may delay the measurement reporting for event triggered and periodical triggered measurements until the Active Time, which is defined in TS 36.321 [6].

[TS 36.331, clause 5.5.5]

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of decreasing quantity, i.e. the best cell is included first;

3> else if the *purpose* is set to '*reportCGI*':

4> if the mandatory present fields of the *cgi-Info* for the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* have been obtained:

5> include the *cgi-Info* containing all the fields that have been successfully acquired;

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

1> else:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasReportList* for this *measId*;

3> remove this *measId* from the *measIdList* within *VarMeasConfig*;

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.3.3.3 Test description

8.3.3.3.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 24.
- System information combination 5 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.3.3.3.2 Test procedure sequence

Table 8.3.3.3.3.2-1 illustrates the downlink power levels to be applied for Cell 1 and Cell 24 at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while row marked "T1" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.3.3.3.2-1: Time instances of cell power levels

	Parameter	Unit	Cell 1	Cell 24	Remark
T0	Cell-specific RS EPRE	dBm/15k Hz	-60	-	Power levels are shall be such that entry condition for event B2 is not satisfied:
	RSSI	dBm	-	-85	
T1	Cell-specific RS EPRE	dBm/15k Hz	[-80]	-	Power levels are shall be such that entry condition for event B2 is satisfied:
	RSSI	dBm	-	-65	

Table 8.3.3.3.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup inter-RAT measurements and reporting for event B2 and set *timeAlignmentTimerDedicated* to *infinity*.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigrationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.3.3.3.2-1.	-	-	-	-
4	Check: Does the UE transmit a *MeasurementReport* message to report event B2 for Cell 24?	-->	*MeasurementReport*	1	P
5	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* including *reportCGI* for Cell 24 and sufficient idle periods for UE to acquire the relevant system information from Cell 24.	<--	*RRCConnectionReconfiguration*	-	-
6	The UE transmits an *RRCConnectionReconfigrationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
7	Check: Does the UE transmit a *MeasurementReport* message with *cellGlobalId* of Cell 24 within 8 sec?	-->	*MeasurementReport*	2	P

8.3.3.3.3.3 Specific message contents

Table 8.3.3.3.3.3-1: *SystemInformationBlockType2* for Cell 1 (preamble and all the steps in Table 8.3.3.3.3.2-2)

Derivation Path: 36.508 clause 4.4.3.3-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType2 ::= SEQUENCE {			
RadioResourceConfigCommonSIB-DEFAULT ::= SEQUENCE {			
pcch-Configuration	PCCH-Configuration-LONGCYCLE		
}			
PCCH-Configuration-LONGCYCLE::= SEQUENCE {			
defaultPagingCycle	rf256		
}			
}			

Table 8.3.3.3.3.3-2: *RRCConnectionReconfiguration* (step 1, Table 8.3.3.3.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated ::= SEQUENCE {			
srb-ToAddModList	Not present		
drb-ToAddModList	Not present		
drb-ToReleaseList	Not present		
mac-MainConfig CHOICE {			
explicitValue SEQUENCE {			
ul-SCH-Config	Not present		
drx-Config	Not present		
timeAlignmentTimerDedicated	infinity		
phr-Config	Not present		
}			
}			
sps-Config	Not present		
physicalConfigDedicated	Not present		
}			

Table 8.3.3.3.3.3-3: *MeasConfig* (step 1, Table 8.3.3.3.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1 with condition GERAN			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f11		
measObject[2]	MeasObjectGERAN-GENERIC(f11)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-B2-GERAN		
reportConfig[1]	ReportConfigInterRAT-B2-GERAN(-69, -79)	EUTRA-Thres = -69; GERAN-Thres = -79; threshold-RSRP = EUTRA-Thres+140 = 71; b2-Threshold2GERAN = GERAN-Thres + 110 = 31.	
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f11		
reportConfigId[1]	IdReportConfig-B2-GERAN		
}			
quantityConfig SEQUENCE {			
quantityConfigGERAN SEQUENCE {			
measQuantityGERAN	rssi		
filterCoefficient	fc0		
}			
}			

Table 8.3.3.3.3.3-4: MeasObjectGERAN-GENERIC(f11) (step 1, Table 8.3.3.3.3.2-2)

Derivation Path: 36.508 Table 4.6.6-2A			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectGERAN-GENERIC(Freq) ::= SEQUENCE {			
carrierFreqs SEQUENCE {			
startingARFCN	Same as Cell 24		
bandIndicator	Same as Cell 24		
followingARFCNs CHOICE {			
explicitListOfARFCNs	Same as Cell 24		
}			
}			
ncc-Permitted	'01000000'B		
}			

Table 8.3.3.3.3.3-5: Void

Table 8.3.3.3.3.3-6: *MeasurementReport* (step 4, Table 8.3.3.3.3.2-2)

Derivation path: 36.508, Table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListGERAN SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry	Report Cell 24	
carrierFreq[1] SEQUENCE {		CarrierFreq of Cell 24	
arcfn	Downlink arcfn of Cell 24		
bandIndicator	Same bandindicator as Cell 24		
}			
physCellId[1]	PhysicalCellIdentity of Cell 24.		
cgi-info[1]	Not present		
measResult[1] SEQUENCE{			
rssi	(0..63)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.3.3.3.3-7: *RRCConnectionReconfiguration* (step 5, Table 8.3.3.3.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
radioResourceConfigDedicated	RadioResourceConfigDedicated-DRX		
}			

Table 8.3.3.3.3.3-8: *MeasConfig* (step 5, Table 8.3.3.3.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList ::= SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f11		
measObject[1] CHOICE {			
measObjectGERAN	MeasObjectGERAN-CGI		
}			
reportConfigToRemoveList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-B2-GERAN		
}			
reportConfigToAddModList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	ReportConfigId-CGI		
reportConfig[1] CHOICE {			
reportConfigGERAN	ReportConfigGERAN-CGI		
}			
measIdToAddModList ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	2		
measObjectId[1]	IdMeasObject-f11		
reportConfigId[1]	ReportConfigId-CGI		
}			
}			

Table 8.3.3.3.3.3-9: MeasObjectGERAN-CGI (step 5, Table 8.3.3.3.3.2-2)

Derivation Path: 36.308, Table 4.6.6-2A			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectGERAN-GENERIC(Freq) ::= SEQUENCE {			
carrierFreqs SEQUENCE {			
startingARFCN	Same as Cell 24		
bandIndicator	Same as Cell 24		
followingARFCNs CHOICE {			
explicitListOfARFCNs	Same as Cell 24		
}			
}			
offsetFreq	Not present		
ncc-Permitted	'01000000'B		
cellForWhichToReportCGI	PhysicalCellIdentity of Cell 24.		
}			

Table 8.3.3.3.3.3-10: ReportConfigGERAN-CGI (step 5, Table 8.3.3.3.3.2-2)

Derivation Path: 36.508, Table 4.6.6-9			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT ::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose CHOICE {			
reportCGI	NULL		
}			
}			
}			
reportAmount	r1		
}			

Table 8.3.3.3.3.3-11: RadioResourceConfigDedicated-DRX (step 5, Table 8.3.3.3.3.2-2)

Derivation Path: 36.508 clause 4.6.3.19			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated-DRX ::= SEQUENCE {			
mac-MainConfig CHOICE {			
explicitValue SEQUENCE {			
ul-SCH-Config SEQUENCE {			
maxHARQ-Tx	n5		
periodicBSR-Timer	infinity		
retxBSR-Timer	sf10240		
ttiBundling	FALSE		
}			
drx-Config CHOICE {			
setup SEQUENCE {			
onDurationTimer	psf6		
drx-InactivityTimer	psf60		
drx-RetransmissionTimer	sf16		
longDRX-CycleStartOffset CHOICE {			
sf2560	4		
}			
shortDRX	Not present		
}			
}			
timeAlignmentTimerDedicated	infinity		
phr-Config CHOICE {			
release	NULL		
}			
}			
}			
physicalConfigDedicated	Not present		
}			

Table 8.3.3.3.3.3-12: *MeasurementReport* (step 7, Table 8.3.3.3.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListGERAN ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry	Report Cell 24	
carrierFreq[1] SEQUENCE {		CarrierFreq of Cell 24	
arcfn	Downlink arcfn of Cell 24		
bandIndicator	Same bandIndicator as Cell 24		
}			
physCellId[1]	PhysicalCellIdentity of Cell 24		
cgi-Info[1] SEQUENCE {			
cellGlobalId SEQUENCE {	CellGlobalIdentity of Cell 24		
plmn-Identity	PLMN Identity of Cell 24		
locationAreaCode	Location Area Code of Cell 24		
cellIdentity	Cell Identity of Cell 24		
}			
routingAreaCode	Routing Area Code of Cell 24		
}			
measResult[1] SEQUENCE {			
rssi	(0..63)		
}			
}			
}			
}			
}			
}			
}			

8.3.3.4 Measurement configuration control and reporting / SON / ANR / CGI reporting of HRPD cell

8.3.3.4.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
    when { UE detects that entering conditions for event B2 are met }
      then { UE sends MeasurementReport for event B2 }
}
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
    when { UE is commanded to report the global cell identity of the
           neighbour cell }
      then { UE determines the global cell identity of the cell included
```

```
          in the associated measurement object by acquiring the
          relevant system information from the concerned cell and
          reports the global cell identity in the MeasurementReport}
}
```

8.3.3.4.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.5.3, 5.5.2.3, 5.5.3.1 , 5.5.4.1, 5.5.4.8, 5.5.5.

[TS 36.331, clause 5.3.5.3]

If the *RRCConnectionReconfiguration* message does not include the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall:

1> if the *RRCConnectionReconfiguration* message includes the *measConfig*:

2> perform the measurement configuration procedure as specified in 5.5.2;

[TS 36.331, clause 5.5.2.3]

The UE shall:

1> for each *measId* included in the received *measIdToAddModList*:

2> if the *triggerType* is set to '*periodical*' and the *purpose* is set to '*reportCGI*' in the *reportConfig* associated with this *measId*:

3> if the *measObject* associated with this *measId* concerns E-UTRA:

4> start timer T321 with the timer value set to 1 second for this *measId*;

3> else:

4> start timer T321 with the timer value set to 8 seconds for this *measId*;

[TS 36.331, clause 5.5.3.1]

The UE supports measurements using a reporting configuration with the *purpose* set to '*reportCGI*', if the network provides sufficient idle periods.

The UE applies the layer 3 filtering as specified in 5.5.3.2, before using the measured results for evaluation of reporting criteria or for measurement reporting.

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if a measurement gap configuration is setup; or

2> the UE does not require measurement gaps to perform the concerned measurement:

3> if *s-Measure* is not configured; or

3> if *s-Measure* is configured and the serving cell RSRP, after layer 3 filtering, is lower than this value; or

3> if the *purpose* for the associated *reportConfig* is set to '*reportCGI*':

4> perform the corresponding measurements of neighbouring cells on the frequencies and RATs indicated in the concerned *measObject*;

2> perform the evaluation of reporting criteria as specified in section 5.5.4;

1> if a *measId* is configured for which the *purpose* within the associated *reportConfig* is set to '*reportCGI*':

2> try to acquire the global cell identity of the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* by acquiring the relevant system information from the concerned cell;

2> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is an E-UTRAN cell:

3> try to acquire the list of additional PLMN Identities, as included in the *plmn-IdentityList*, if multiple PLMN identities are broadcast in the concerned cell;

NOTE: The 'primary' PLMN is part of the global cell identity.

2> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a UTRAN cell:

3> try to acquire the LAC, the RAC and the list of additional PLMN Identities, if multiple PLMN identities are broadcast in the concerned cell;

2> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a GERAN cell:

3> try to acquire the RAC in the concerned cell;

2> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a CDMA2000 cell and the *cdma2000-Type* included in the *measObject* is '*typeHRPD*':

3> try to acquire the Sector ID in the concerned cell;

[TS 36.331, clause 5.5.4.1]

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the corresponding *reportConfig* includes a purpose set to '*reportStrongestCellsForSON*':

3> consider any neighbouring cell detected on the associated frequency to be applicable;

2> else if the corresponding *reportConfig* includes a purpose set to '*reportCGI*':

3> consider any neighbouring cell detected on the associated frequency/ set of frequencies (GERAN) which has a physical cell identity matching the value of the *cellForWhichToReportCGI* included in the corresponding *measObject* within the *VarMeasConfig* to be applicable;

2> else:

3> if the corresponding *measObject* concerns E-UTRA:

4> consider any neighbouring cell detected on the associated frequency to be applicable when the concerned cell is not included in the *blackCellsToAddModList* defined within the *VarMeasConfig* for this *measId*;

3> else if the corresponding *measObject* concerns UTRA or CDMA2000:

4> consider a neighbouring cell on the associated frequency to be applicable when the concerned cell is included in the *cellsToAddModList* defined within the *VarMeasConfig* for this *measId* (i.e. the cell is included in the white-list);

3> else if the corresponding *measObject* concerns GERAN:

4> consider a neighbouring cell on the associated set of frequencies to be applicable when the concerned cell matches the *ncc-Permitted* defined within the *VarMeasConfig* for this *measId*;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig*, while the *VarMeasReportList* does not include an measurement reporting entry for this *measId* (a first cell triggers the event):

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the entry condition applicable for this event, i.e. the event corresponding with the *eventId* of the corresponding *reportConfig* within *VarMeasConfig*, is fulfilled for one or more applicable cells not included in the *cellsTriggeredList* for all measurements after layer 3 filtering taken during *timeToTrigger* defined for this event within the *VarMeasConfig* (a subsequent cell triggers the event):

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> include the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *triggerType* is set to '*event*' and if the leaving condition applicable for this event is fulfilled for one or more of the cells included in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* for all measurements after layer 3 filtering taken during *timeToTrigger* defined within the *VarMeasConfig* for this event:

3> remove the concerned cell(s) in the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId*;

3> if *reportOnLeave* is set to *TRUE* for the corresponding reporting configuration:

4> initiate the measurement reporting procedure, as specified in 5.5.5;

3> if the *cellsTriggeredList* defined within the *VarMeasReportList* for this *measId* is empty:

4> remove the measurement reporting entry within the *VarMeasReportList* for this *measId*;

4> stop the periodical reporting timer for this *measId*, if running;

2> if the *purpose* is included and set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*' and if a (first) measurement result is available for one or more applicable cells:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 1: If the *purpose* is set to '*reportStrongestCells*', the UE initiates a first measurement report immediately after the quantity to be reported becomes available for at least either serving cell or one of the applicable cells. If the purpose is set to '*reportStrongestCellsForSON*', the UE initiates a first measurement report when it has determined the strongest cells on the associated frequency.

2> upon expiry of the periodical reporting timer for this *measId*:

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> if the *purpose is* included and set to '*reportCGI*' and if the UE acquired the information needed to set all fields of *cgi-Info* for the requested cell:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> stop timer T321;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

2> upon expiry of the T321 for this *measId*:

3> include a measurement reporting entry within the *VarMeasReportList* for this *measId*;

3> set the *numberOfReportsSent* defined within the *VarMeasReportList* for this *measId* to 0;

3> initiate the measurement reporting procedure, as specified in 5.5.5;

NOTE 2: The UE does not stop the periodical reporting with *triggerType* set to '*event*' or to '*periodical*' while the corresponding measurement is not performed due to the serving cell RSRP being equal to or better than *s-Measure* or due to the measurement gap not being setup.

[TS 36.331, clause 5.5.4.8]

The UE shall:

1> for UTRA and CDMA2000, only trigger the event for cells included in the corresponding measurement object;

1> consider the entering condition for this event to be satisfied when both condition B2-1 and condition B2-2, as specified below, are fulfilled apply inequality B2-1 and inequality B2-2 i.e. both have to be fulfilled, as specified below, as the entry condition for this event;

1> consider the leaving condition for this event to be satisfied when condition B2-3 or condition B2-4, i.e. at least one of the two, as specified below, is fulfilled apply inequality B3-3 and inequality B2-4 i.e. at least one of the two has to be fulfilled, as specified below, as the leaving condition for this event;

Inequality B2-1 (Entering condition 1)

$$Ms + Hys < Thresh1$$

Inequality B2-2 (Entering condition 2)

$$Mn + Ofn - Hys > Thresh2$$

Inequality B2-3 (Leaving condition 1)

$$Ms - Hys > Thresh1$$

Inequality B2-4 (Leaving condition 2)

$$Mn + Ofn + Hys < Thresh2$$

The variables in the formula are defined as follows:

Ms is the measurement result of the serving cell, not taking into account any cell individual offsets.

Mn is the measurement result of the inter-RAT neighbour cell, not taking into account any offsets neighbouring inter RAT cell.

Ofn is the frequency specific offset of the frequency of the inter-RAT neighbour cell (i.e. *offsetFreq* as defined within the *measObject* corresponding to the frequency of the inter-RAT neighbour cell)neighbour cell.

Hys is the hysteresis parameter for this event (i.e. *hysteresis* as defined within *reportConfigInterRAT* the *VarMeasurementConfiguration* for this event).

Thresh1 is the threshold parameter for this event (i.e. b2-*Threshold1* as defined within *reportConfigInterRAT*the *VarMeasurementConfiguration* for this event).

Thresh2 is the threshold parameter for this event (i.e. *b2-Threshold2* as defined within *reportConfigInterRAT* the *VarMeasurementConfiguration* for this event).

Ms is expressed in dBm in case of RSRP, or in dB in case of RSRQ.

Mn is expressed in dBm or dB, depending on the measurement quantity of the inter-RAT neighbouring inter RAT cell.

Ofn, Hys are expressed in dB.

Thresh1 is expressed in the same unit as ***Mn***dBm in case ***Ms*** is expressed in dBm; otherwise it is expressed in dB.

Thresh2 is expressed in the same unit as ***Mn***dBm in case ***Mn*** is expressed in dBm; otherwise it is expressed in dB.

[TS 36.331, clause 5.5.5]

The purpose of this procedure is to transfer measurement results from the UE to E-UTRAN.

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

1> set the *measId* to the measurement identity that triggered the measurement reporting;

1> set the *measResultServCell* to include the quantities of serving cell;

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

3> if the *triggerType* is set to '*event*':

4> include the cells included in the *cellsTriggeredList* as defined within the *VarMeasReportList* for this *measId*;

3> else:

4> include the applicable cells for which the new measurement results became available since the last periodical reporting or since the measurement was initiated or reset;

NOTE: The reliability of the report (i.e. the certainty it contains the strongest cells on the concerned frequency) depends on the measurement configuration i.e. the *reportInterval*. The related performance requirements are specified in TS 36.133 [16].

3> for each cell that is included in the *measResultNeighCells*, include the *physCellId*;

3> if the *triggerType* is set to '*event*'; or the *purpose* is set to '*reportStrongestCells*' or to '*reportStrongestCellsForSON*':

4> for each included cell, include the layer 3 filtered measured results in accordance with the *reportConfig* for this *measId*, ordered as follows:

5> if the *measObject* associated with this *measId* concerns E-UTRA:

6> set the *measResult* to include the quantity(ies) indicated in the *reportQuantity* within the concerned *reportConfig* in order of decreasing *triggerQuantity*, i.e. the best cell is included first;

5> else:

6> set the *measResult* to the quantity as configured for the concerned RAT within the *quantityConfig* in order of decreasing quantity, i.e. the best cell is included first;

3> else if the *purpose* is set to '*reportCGI*':

4> if the mandatory present fields of the *cgi-Info* for the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* have been obtained:

5> include the *cgi-Info* containing all the fields that have been successfully acquired;

1> increment the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* by 1;

1> stop the periodical reporting timer, if running;

1> if the *numberOfReportsSent* as defined within the *VarMeasReportList* for this *measId* is less than the *reportAmount* as defined within the corresponding *reportConfig* for this *measId*:

2> start the periodical reporting timer with the value of *reportInterval* as defined within the corresponding *reportConfig* for this *measId*;

1> else:

2> if the *triggerType* is set to '*periodical*':

3> remove the entry within the *VarMeasReportList* for this *measId*;

3> remove this *measId* from the *measIdList* within *VarMeasConfig*;

1> if the measured results are for CDMA2000 HRPD:

2> set the *preRegistrationStatusHRPD* to the UE's CDMA2000 upper layer's HRPD *preRegistrationStatus*;

1> submit the *MeasurementReport* message to lower layers for transmission, upon which the procedure ends;

8.3.3.4.3 Test description

8.3.3.4.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 15
- System information combination 6 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

UE:

None.

8.3.3.4.3.2 Test procedure sequence

Table 8.3.3.4.3.2-1 illustrates the downlink power levels to be applied for Cell 1 and Cell 15 at various time instants of the test execution. Row marked "T0" denotes the conditions after the preamble, while row marked "T1" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.3.4.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 15	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-60	-	The power level values are such that entering conditions for event B2 are not satisfied: Inequality B2-1 (Entering condition 1) *Ms* + *Hys* > *Thresh*1 Inequality B2-2 (Entering condition 2) *Mn* + *Ofn* – *Hys* < *Thresh*2
	Îor/Ioc	dB	-	-20	
	Ioc	dBm/1.23MHz	-	-55	
	Pilot_Ec/Io (Note 1)	dB	-	-20	
T1	Cell-specific RS EPRE	dBm/15kHz	-80	-	The power level values are such that entering conditions for event B2 are satisfied: Inequality B2-1 (Entering condition 1) *Ms* + *Hys*< *Thresh*1 Inequality B2-2 (Entering condition 2) Mn + Ofn – Hys > Thresh2
	Îor/Ioc	dB	-	-5	
	Ioc	dBm/1.23MHz	-	-55	
	Pilot_Ec/Io (Note 1)	dB	-	-6	
Note 1: This parameter is not directly settable, but is derived by calculation from the other parameters set by the SS					

Table 8.3.3.4.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup inter RAT measurement and reporting for event B2 and set *timeAlignmentTimerDedicated* to *infinity*.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS re-adjusts the cell-specific reference signal level according to row "T1" in table 8.3.3.4.3.2-1.	-	-	-	-
4	Check: Does the UE transmit a *MeasurementReport* message to report event B2 on Cell 15?	-->	*MeasurementReport*	1	P
5	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* including *reportCGI* for Cell 15 and sufficient idle periods for UE to acquire the relevant system information from Cell 15.	<--	*RRCConnectionReconfiguration*	-	-
6	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
7	Check: Does the UE transmit a *MeasurementReport* message with *cellGlobalId* of Cell 15 within 8 sec?	-->	*MeasurementReport*	2	P

8.3.3.4.3.3 Specific message contents

Table 8.3.3.4.3.3-1: *SystemInformationBlockType2* for Cell 1 (preamble and all the steps in Table 8.3.3.4.3.2-2)

Derivation Path: TS 36.508 clause 4.4.3.3-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType2 ::= SEQUENCE {			
RadioResourceConfigCommonSIB-DEFAULT ::= SEQUENCE {			
pcch-Config	PCCH-Config-LONGCYCLE		
}			
PCCH-Config-LONGCYCLE::= SEQUENCE {			
defaultPagingCycle	rf256		
nB	oneT		
}			
}			

Table 8.3.3.4.3.3-2: *RRCConnectionReconfiguration* (step 1, Table 8.3.3.4.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated ::= SEQUENCE {			
srb-ToAddModList	Not present		
drb-ToAddModList	Not present		
drb-ToReleaseList	Not present		
mac-MainConfig CHOICE {			
explicitValue SEQUENCE {			
ul-SCH-Config	Not present		
drx-Config	Not present		
timeAlignmentTimerDedicated	infinity		
phr-Config	Not present		
}			
}			
sps-Config	Not present		
physicalConfigDedicated	Not present		
}			

Table 8.3.3.4.3.3-3: *MeasConfig* (step 1, Table 8.3.3.4.3.2-2)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f14		
measObject[2]	MeasObjectCDMA2000-GENERIC		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-B2-CDMA2000		
reportConfig[1]	ReportConfigInterRAT-B2-CDMA2000(-69, -18)		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f14		
reportConfigId[1]	IdReportConfig-B2-CDMA2000		
}			
quantityConfig SEQUENCE {			
quantityConfigCDMA2000 SEQUENCE {			
measQuantityCDMA2000	pilotStrength		
}			
}			
measGapConfig CHOICE {			
setup SEQUENCE {			
gapOffset CHOICE {			
gp1	30		
}			
}			
}			
}			
}			

Table 8.3.3.4.3.3-4: MeasObjectCDMA2000-GENERIC (step 1, Table 8.3.3.4.3.2-2)

Derivation Path: TS 36.508, Table 4.6.6-1C			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectCDMA2000-GENERIC ::= SEQUENCE {			
cdma2000-Type	TypeHRPD		
carrierFreq SEQUENCE {			
bandClass	Band Class of frequency under test		
arfcn	f14		
}			
searchWindowSize	15		
}			

Table 8.3.3.4.3.3-5 *MeasurementReport* (step 4, Table 8.3.3.4.3.2-2)

Derivation Path: TS 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultsCDMA2000 SEQUENCE {			
preRegistrationStatusHRPD	FALSE		
measResultListCDMA2000 SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysCellId of Cell 15		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
pilotStrength	(0..63)		
}			
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.3.4.3.3-6: *RRCConnectionReconfiguration* (step 5, Table 8.3.3.4.3.2-2)

Derivation Path: TS 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
radioResourceConfigDedicated	RadioResourceConfigDedicated-DRX		
}			

Table 8.3.3.4.3.3-7 *MeasConfig* (step 5, Table 8.3.3.4.3.2-2)

Derivation Path: TS 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measIdToAddModList ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	2		
measObjectId[1]	IdMeasObject-f14		
reportConfigId[1]	ReportConfigId-CGI		
}			
measObjectToAddModList ::= SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f14		
measObject[1]	MeasObjectCDMA2000-CGI		
}			
reportConfigToRemoveList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {			
reportConfigId	IdReportConfig-B2		
}			
reportConfigToAddModList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	ReportConfigId-CGI		
reportConfig[1]	ReportConfigCDMA2000-CGI		
}			
}			

Table 8.3.3.4.3.3-7A: MeasObjectCDMA2000-CGI (step 5, Table 8.3.3.4.3.2-2)

Derivation Path: TS 36.508, Table 4.6.6-1C			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectCDMA2000-GENERIC ::= SEQUENCE {			
cdma2000-Type	TypeHRPD		
carrierFreq SEQUENCE {			
bandClass	Band Class of frequency under test		
arfcn	f14		
}			
searchWindowSize	15		
cellForWhichToReportCGI	PhysicalCellIdentity of Cell 15		
}			

Table 8.3.3.4.3.3-8: ReportConfigCDMA2000-CGI (step 5, Table 8.3.3.4.3.2-2)

Derivation Path: 36.508, Table 4.6.6-9 ReportConfigInterRAT-PERIODICAL			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-PERIODICAL ::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose CHOICE {			
reportCGI	NULL		
}			
}			
}			
reportAmount	r1		
}			

Table 8.3.3.4.3.3-9: RadioResourceConfigDedicated-DRX (step 5, Table 8.3.3.4.3.2-2)

Derivation Path: TS 36.508 clause 4.6.3.19			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated-DRX ::= SEQUENCE {			
mac-MainConfig CHOICE {			
explicitValue SEQUENCE {			
ul-SCH-Config SEQUENCE {			
maxHARQ-Tx	n5		
periodicBSR-Timer	infinity		
retxBSR-Timer	sf10240		
ttiBundling	FALSE		
}			
drx-Config CHOICE {			
setup SEQUENCE {			
onDurationTimer	psf6		
drx-InactivityTimer	psf60		
drx-RetransmissionTimer	sf16		
longDRX-CycleStartOffset CHOICE {			
sf2560	0		
}			
shortDRX	Not present		
}			
}			
timeAlignmentTimerDedicated	infinity		
phr-Config CHOICE {			
release	NULL		
}			
}			
}			
physicalConfigDedicated	Not present		
}			

Table 8.3.3.4.3.3-10: *MeasurementReport* (step 7, Table 8.3.3.4.3.2-2)

Derivation path: TS 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measuredResults SEQUENCE {			
measId	2		
measResultServing SEQUENCE {		Report Cell 15	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultsCDMA2000 SEQUENCE {			
preRegistrationStatusHRPD	FALSE		
measResultListCDMA2000 SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 15		
cgi-Info[1] CHOICE {			
cellGlobalIdHRPD	cellGlobalId of Cell 15		
}			
measResult[1] SEQUENCE {			
pilotStrength	(0..63)		
}			
}			
}			
}			
}			
}			
}			
}			

8.3.3.5 Void

8.3.4 Measurement for CSG, Hybrid and Open cells

8.3.4.1 Intra-frequency SI acquisition / CSG cell and non-CSG cell

8.3.4.1.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE is configured to acquire the System Information of a neighbour member CSG cell }
   then { UE acquires the System Information of the cell included in the associated measurement
object and reports the global cell identity, the TAI, the CSG ID and its membership status in the
MeasurementReport }
}
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE is configured to acquire the System Information of a neighbour non-member CSG cell }
   then { UE acquires the System Information of the cell included in the associated measurement
object and reports the global cell identity, the TAI and the CSG ID in the MeasurementReport }
}
```

(3)

```
with { UE in E-UTRA RRC_CONNECTED state }
```

```
ensure that {
  when { UE is configured to acquire the System Information of a neighbour non-CSG cell }
   then { UE acquires the System Information of the cell included in the associated measurement
object and reports the global cell identity and the TAI in the MeasurementReport }
}
```

8.3.4.1.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.5.2.3, 5.5.3.1 and 5.5.5, and TS 36.133, clause 8.1.2.2.3.1.

[TS 36.331, clause 5.5.2.3]

...

The UE shall:

...

2> if the *triggerType* is set to '*periodical*' and the *purpose* is set to '*reportCGI*' in the *reportConfig* associated with this *measId*:

3> if the *measObject* associated with this *measId* concerns E-UTRA:

4> if the *si-RequestForHO* is included in the *reportConfig* associated with this *measId*:

5> start timer T321 with the timer value set to 150 ms for this *measId*;

...

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is an E-UTRAN cell:

4> try to acquire the CSG identity, if the CSG identity is broadcast in the concerned cell;

...

[TS 36.331, clause 5.5.3.1]

...

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *purpose* for the associated *reportConfig* is set to '*reportCGI*':

3> if *si-RequestForHO* is configured for the associated *reportConfig*:

4> perform the corresponding measurements on the frequency and RAT indicated in the associated *measObject* using autonomous gaps as necessary;

...

[TS 36.331, clause 5.5.5]

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

...

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

...

3> else if the *purpose* is set to '*reportCGI*':

4> if the mandatory present fields of the *cgi-Info* for the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* have been obtained:

5> if the cell broadcasts a CSG identity:

6> include the *csg-Identity*;

6> include the *csg-MemberStatus* and set it to '*member*' if the CSG identity is included in the UE's CSG whitelist;

...

[TS 36.133, clause 8.1.2.2.3.1]

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 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', 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 Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP|dBm $\geq$ -127 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21 and SCH Ês/Iot $\geq$ -6 dB,
- SCH_RP|dBm $\geq$ -126 dBm for Band 9 and SCH Ês/Iot $\geq$ -6 dB,
- SCH_RP|dBm $\geq$ -125 dBm for Bands 2, 5, 7 and SCH Ês/Iot $\geq$ -6 dB,
- SCH_RP|dBm $\geq$ -124 dBm for Bands 3, 8, 12, 13, 14, 17, 20 and SCH Ês/Iot $\geq$ -6 dB.

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 [2] are used.

…

8.3.4.1.3 Test description

8.3.4.1.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 2, Cell 4 and Cell 11.
- Cell 1 and Cell 11 are not CSG cells.
- Cell 2 and Cell 4 are CSG cells.
- System information combination 7 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA Cell 2 and Cell 4.

UE:

- The UE's Allowed CSG list contains the CSG ID of Cell 2.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.4.1.3.2 Test procedure sequence

Table 8.3.4.1.3.2-1 illustrates the downlink power levels to be applied for Cell 1, Cell 2, Cell 4 and Cell 11 at various time instants of the test execution. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.4.1.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 2 (DL only)	Cell 4 (DL only)	Cell 11 (DL only)	Remark
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-79	Off	Off	Power levels are such that entry condition for event A3 on Cell 2 is satisfied: $Mn+Ofn+Ocn-Hys>Ms+Ofs+Ocs+Off$
T2	Cell-specific RS EPRE	dBm/15kHz	-85	Off	-79	Off	Power levels are such that entry condition for event A3 on Cell 4 is satisfied: $Mn+Ofn+Ocn-Hys>Ms+Ofs+Ocs+Off$
T3	Cell-specific RS EPRE	dBm/15kHz	-85	Off	Off	-79	Power levels are such that entry condition for event A3 on Cell 11 is satisfied: $Mn+Ofn+Ocn-Hys>Ms+Ofs+Ocs+Off$

Table 8.3.4.1.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup intra LTE measurement and reporting for event A3 (intra frequency measurement) and set *timeAlignmentTimerDedicated* to *infinity*.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigrationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS re-adjusts the cell-specific reference signal levels according to row "T1" in table 8.3.4.1.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message to report event A3 with the measured RSRP value for Cell 2.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* including *reportCGI* and *si-RequestForHO* for Cell 2.	<--	*RRCConnectionReconfiguration*	-	-
6	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
7	Check: Does the UE transmit a *MeasurementReport* message with the System Information acquired on Cell 2 within 150 ms?	-->	*MeasurementReport*	1	P
8	The SS re-adjusts the cell-specific reference signal level according to row "T2" in table 8.3.4.1.3.2-1.	-	-	-	-
9	The UE transmits a *MeasurementReport* message to report event A3 with the measured RSRP value for Cell 4.	-->	*MeasurementReport*	-	-
10	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* including *reportCGI* and *si-RequestForHO* for Cell 4.	<--	*RRCConnectionReconfiguration*	-	-
11	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
12	Check: Does the UE transmit a *MeasurementReport* message with the System Information acquired on Cell 4 within 150 ms?	-->	*MeasurementReport*	2	P
13	The SS re-adjusts the cell-specific reference signal level according to row "T3" in table 8.3.4.1.3.2-1.	-	-	-	-
14	The UE transmits a *MeasurementReport* message to report event A3 with the measured RSRP value for Cell 11.	-->	*MeasurementReport*	-	-
15	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* including *reportCGI* and *si-RequestForHO* for Cell 11.	<--	*RRCConnectionReconfiguration*	-	-
16	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
17	Check: Does the UE transmit a *MeasurementReport* message with the System Information acquired on Cell 11 within 150 ms?	-->	*MeasurementReport*	3	P

8.3.4.1.3.3 Specific message contents

Table 8.3.4.1.3.3-1: Conditions for Tables 8.3.4.1.3.3-2 and 8.3.4.1.3.3-3

Condition	Explanation
Cell 1	This condition applies to system information transmitted on Cell 1.
Cell 2	This condition applies to system information transmitted on Cell 2.
Cell 4	This condition applies to system information transmitted on Cell 4.
Cell 11	This condition applies to system information transmitted on Cell 11.

Table 8.3.4.1.3.3-2: *SystemInformationBlockType1* for Cells 1, 2, 4 and 11 (preamble and all steps, Table 8.3.4.1.3.2-2)

Derivation Path: 36.508 clause 4.4.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType1 ::= SEQUENCE {			
cellAccessRelatedInfo SEQUENCE {			
csg-Indication	FALSE		Cell1 Cell 11
	TRUE		Cell 2 Cell 4
csg-Identity	Not present		Cell 1 Cell 11
	'000 0000 0000 0000 0000 0000 0010'B		Cell 2
	'000 0000 0000 0000 0000 0000 0100'B		Cell 4
}			
}			

Table 8.3.4.1.3.3-3: *SystemInformationBlockType4* for Cells 2 and 4 (preamble and all steps, Table 8.3.4.1.3.2-2)

Derivation Path: 36.508 clause 4.4.3.3, Table 4.4.3.3-3			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType4 ::= SEQUENCE {			
csg-PhysCellIdRange ::= SEQUENCE {			
Start	2		
Range	n4		
}			
}			

Table 8.3.4.1.3.3-4: *RRCConnectionReconfiguration* (Step 1, Table 8.3.4.1.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated ::= SEQUENCE {			
srb-ToAddModList	Not present		
drb-ToAddModList	Not present		
drb-ToReleaseList	Not present		
mac-MainConfig CHOICE {			
explicitValue SEQUENCE {			
ul-SCH-Config	Not present		
drx-Config	Not present		
timeAlignmentTimerDedicated	infinity		
phr-Config	Not present		
}			
}			
sps-Config	Not present		
physicalConfigDedicated	Not present		
}			

Table 8.3.4.1.3.3-5: *MeasConfig* (Step 1, Table 8.3.4.1.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measIdToAddModList ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3		
}			
measObjectToAddModList ::= SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
}			
reportConfigToAddModList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfig-A3-H		
}			
}			

Table 8.3.4.1.3.3-6: ReportConfig-A3-H (Step 1, Table 8.3.4.1.3.2-2)

Derivation path: 36.508 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 {			
}			
}			
timeToTrigger	ms0		
}			
}			
reportQuantity	sameAsTriggerQuantity		
}			

Table 8.3.4.1.3.3-7 *MeasurementReport* (Step 4, Table 8.3.4.1.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 2	
physCellId	PhysCellId of Cell 2		
cgi-Info	Not present		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
}			
}			
}			

Table 8.3.4.1.3.3-8: *RRCConnectionReconfiguration* (Steps 5, 10 and 15, Table 8.3.4.1.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.4.1.3.3-9: *MeasConfig* (Steps 5, 10 and 15, Table 8.3.4.1.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measIdToAddModList ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	2		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	ReportConfigId-CGI		
}			
measObjectToAddModList ::= SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-CGI		
}			
reportConfigToRemoveList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {			
reportConfigId	IdReportConfig-A3		
}			
reportConfigToAddModList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	ReportConfigId-CGI		
reportConfig[1]	ReportConfig-CGI		
}			
}			

Table 8.3.4.1.3.3-10: MeasObjectEUTRA-CGI (Step 5, Table 8.3.4.1.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-CGI ::= SEQUENCE {			
carrierFreq SEQUENCE {}	Downlink EARFCN for f1		
cellForWhichToReportCGI	PhysCellId of Cell 2		
}			

Table 8.3.4.1.3.3-11: ReportConfig-CGI (Steps 5, 10 and 15, Table 8.3.4.1.3.2-2)

Derivation Path: 36.508, Table 4.6.6-7			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose	reportCGI		
}			
reportQuantity	sameAsTriggerQuantity		
reportAmount	r1		
si-RequestForHO	setup		
}			

Table 8.3.4.1.3.3-12: *MeasurementReport* (Step 7, Table 8.3.4.1.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysCellId of Cell 2		
cgi-Info[1] SEQUENCE {			
cellGlobalId	cellGlobalId formed from the first entry in 'plmn-IdentityList' and 'cellIdentity' of Cell 2		
trackingAreaCode	trackingAreaCode of Cell 2		
plmn-IdentityList	Not present		
}			
measResult[1] SEQUENCE {			
rsrpResult	Not present		
rsrqResult	Not present		
csg-MemberStatus	member		
csg-Identity	'000 0000 0000 0000 0000 0000 0010'B	CSG ID of Cell 2	
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.4.1.3.3-13: *MeasurementReport* (Step 9, Table 8.3.4.1.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 4	
physCellId	PhysCellId of Cell 4		
cgi-Info	Not present		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
}			
}			
}			

Table 8.3.4.1.3.3-14: MeasObjectEUTRA-CGI (Step 10, Table 8.3.4.1.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-CGI ::= SEQUENCE {			
carrierFreq SEQUENCE {}	Downlink EARFCN for f1		
cellForWhichToReportCGI	PhysCellId of Cell 4		
}			

Table 8.3.4.1.3.3-15: *MeasurementReport* (Step 12, Table 8.3.4.1.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysCellId of Cell 4		
cgi-Info[1] SEQUENCE {			
cellGlobalId	cellGlobalId formed from the first entry in 'plmn-IdentityList' and 'cellIdentity' of Cell 4		
trackingAreaCode	trackingAreaCode of Cell 4		
plmn-IdentityList	Not present		
}			
measResult[1] SEQUENCE {			
rsrpResult	Not present		
rsrqResult	Not present		
csg-MemberStatus	Not present		
csg-Identity	'000 0000 0000 0000 0000 0000 0100'B	CSG ID of Cell 4	
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.3.4.1.3.3-16: *MeasurementReport* (Step 14, Table 8.3.4.1.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 11	
physCellId	PhysCellId of Cell 11		
cgi-Info	Not present		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
}			
}			
}			

Table 8.3.4.1.3.3-17: MeasObjectEUTRA-CGI (Step 15, Table 8.3.4.1.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-CGI ::= SEQUENCE {			
carrierFreq SEQUENCE {}	Downlink EARFCN for f1		
cellForWhichToReportCGI	PhysCellId of Cell 11		
}			

Table 8.3.4.1.3.3-18: *MeasurementReport* (Step 17, Table 8.3.4.1.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysCellId of Cell 11		
cgi-Info[1] SEQUENCE {			
cellGlobalId	cellGlobalId formed from the first entry in 'plmn-IdentityList' and 'cellIdentity' of Cell 11		
trackingAreaCode	trackingAreaCode of Cell 11		
plmn-IdentityList	Not present		
}			
measResult[1] SEQUENCE {			
rsrpResult	Not present		
rsrqResult	Not present		
csg-MemberStatus	Not present		
csg-Identity	Not present		
}			
}			
}			
}			
}			
}			
}			

8.3.4.2 Inter-frequency SI acquisition / Non-member hybrid cell

8.3.4.2.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE is configured to acquire the System Information of a neighbour non-member hybrid cell }
   then { UE acquires the System Information of the cell included in the associated measurement
object and reports the global cell identity, the TAI and the CSG ID in the MeasurementReport }
}
```

8.3.4.2.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.5.2.3, 5.5.3.1 and 5.5.5, and TS 36.133, clause 8.1.2.2.3.1.

[TS 36.331, clause 5.5.2.3]

...

The UE shall:

...

2> if the *triggerType* is set to '*periodical*' and the *purpose* is set to '*reportCGI*' in the *reportConfig* associated with this *measId*:

3> if the *measObject* associated with this *measId* concerns E-UTRA:

4> if the *si-RequestForHO* is included in the *reportConfig* associated with this *measId*:

5> start timer T321 with the timer value set to 150 ms for this *measId*;

...

[TS 36.331, clause 5.5.3.1]

...

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *purpose* for the associated *reportConfig* is set to '*reportCGI*':

3> if *si-RequestForHO* is configured for the associated *reportConfig*:

4> perform the corresponding measurements on the frequency and RAT indicated in the associated *measObject* using autonomous gaps as necessary;

…

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is an E-UTRAN cell:

4> try to acquire the CSG identity, if the CSG identity is broadcast in the concerned cell;

4> if *si-RequestForHO* is not configured for the associated *reportConfig*:

5> try to acquire the list of additional PLMN Identities, as included in the *plmn-IdentityList*, if multiple PLMN identities are broadcast in the concerned cell;

...

[TS 36.331, clause 5.5.5]

...

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

...

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

...

3> else if the *purpose* is set to '*reportCGI*':

4> if the mandatory present fields of the *cgi-Info* for the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* have been obtained:

5> if the cell broadcasts a CSG identity:

6> include the *csg-Identity*;

6> include the *csg-MemberStatus* and set it to '*member*' if the CSG identity is included in the UE's CSG whitelist;

5> if the '*si-RequestForHO*' is configured within the *reportConfig* associated with this *measId*:

6> include the *cgi-Info* containing all the fields that have been successfully acquired, except for the *plmn-IdentityList*;

5> else:

6> include the *cgi-Info* containing all the fields that have been successfully acquired;

...

[TS 36.133, clause 8.1.2.2.3.1]

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 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', 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 Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP|dBm $\geq$ -127 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21 and SCH Ês/Iot $\geq$ -6 dB,
- SCH_RP|dBm $\geq$ -126 dBm for Band 9 and SCH Ês/Iot $\geq$ -6 dB,
- SCH_RP|dBm $\geq$ -125 dBm for Bands 2, 5, 7 and SCH Ês/Iot $\geq$ -6 dB,
- SCH_RP|dBm $\geq$ -124 dBm for Bands 3, 8, 12, 13, 14, 17, 20 and SCH Ês/Iot $\geq$ -6 dB.

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 [2] are used.

…

8.3.4.2.3 Test description

8.3.4.2.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 3 are E-UTRA cells.
- Cell 1 is a non CSG cell.
- Cell 3 is a hybrid cell.
- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA Cell 1.
- System information combination 13 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA Cell 3.

UE:

- The UE's Allowed CSG list is empty.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.4.2.3.2 Test procedure sequence

Table 8.3.4.2.3.2-1 illustrates the downlink power levels to be applied for Cell 1 and Cell 3 at various time instants of the test execution. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.4.2.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 3 (DL only)	Remark
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-73	Power levels are such that entry condition for event A3 on Cell 3 is satisfied: $Mn+Ofn+Ocn-Hys>Ms+Ofs+Ocs+Off$

Table 8.3.4.2.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup intra LTE measurement and reporting for event A3 (inter frequency measurement) and set *timeAlignmentTimerDedicated* to *infinity*.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigrationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS re-adjusts the cell-specific reference signal levels according to row "T1" in table 8.3.4.2.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message to report event A3 with the measured RSRP value for Cell 3.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* including *reportCGI* and *si-RequestForHO* for Cell 3.	<--	*RRCConnectionReconfiguration*	-	-
6	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
7	Check: Does the UE transmit a *MeasurementReport* message with the System Information acquired on Cell 3 within 150 ms?	-->	*MeasurementReport*	1	P

8.3.4.2.3.3 Specific message contents

Table 8.3.4.2.3.3-1: Conditions for Tables 8.3.4.2.3.3-2

Condition	Explanation
Cell 1	This condition applies to system information transmitted on Cell 1.
Cell 3	This condition applies to system information transmitted on Cell 3.

Table 8.3.4.2.3.3-2: *SystemInformationBlockType1* for Cells 1 and 3 (preamble and all steps, Table 8.3.4.2.3.2-2)

Derivation Path: 36.508 clause 4.4.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType1 ::= SEQUENCE {			
cellAccessRelatedInfo SEQUENCE {			
csg-Indication	FALSE		
csg-Identity	Not present		Cell 1
	'000 0000 0000 0000 0000 0000 0010'B		Cell 3
}			
}			

Table 8.3.4.2.3.3-3: *SystemInformationBlockType4* for Cell 3 (preamble and all steps, Table 8.3.4.2.3.2-2)

Derivation Path: 36.508 clause 4.4.3.3, Table 4.4.3.3-3			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType4 ::= SEQUENCE {			
csg-PhysCellIdRange ::= SEQUENCE {			
start	4		
range	Not present		
}			
}			

Table 8.3.4.2.3.3-4: *RRCConnectionReconfiguration* (Step 1, Table 8.3.4.2.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated ::= SEQUENCE {			
srb-ToAddModList	Not present		
drb-ToAddModList	Not present		
drb-ToReleaseList	Not present		
mac-MainConfig CHOICE {			
explicitValue SEQUENCE {			
ul-SCH-Config	Not present		
drx-Config	Not present		
timeAlignmentTimerDedicated	infinity		
phr-Config	Not present		
}			
}			
sps-Config	Not present		
physicalConfigDedicated	Not present		
}			

Table 8.3.4.2.3.3-5: *MeasConfig* (Step 1, Table 8.3.4.2.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-1 with condition INTER-FREQ			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList ::= SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f2		
measObject[2]	MeasObjectEUTRA-GENERIC(f2)		
}			
reportConfigToAddModList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfig-A3-H		
}			
measIdToAddModList ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f2		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

Table 8.3.4.2.3.3-6: ReportConfig-A3-H (Step 1, Table 8.3.4.2.3.2-2)

Derivation path: 36.508 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 {			
}			
}			
timeToTrigger	ms0		
}			
}			
reportQuantity	sameAsTriggerQuantity		
}			

Table 8.3.4.2.3.3-7: *MeasurementReport* (Step 4, Table 8.3.4.2.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 3	
physCellId	PhysCellId of Cell 3		
cgi-Info	Not present		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
}			
}			
}			

Table 8.3.4.2.3.3-8: *RRCConnectionReconfiguration* (Step 5, Table 8.3.4.2.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.4.2.3.3-9: *MeasConfig* (Step 5, Table 8.3.4.2.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measIdToAddModList ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	2		
measObjectId[1]	IdMeasObject-f2		
reportConfigId[1]	ReportConfigId-CGI		
}			
measObjectToAddModList ::= SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f2		
measObject[1]	MeasObjectEUTRA-CGI		
}			
reportConfigToRemoveList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {			
reportConfigId	IdReportConfig-A3		
}			
reportConfigToAddModList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	ReportConfigId-CGI		
reportConfig[1]	ReportConfig-CGI		
}			
measGapConfig CHOICE {			
release	NULL		
}			
}			

Table 8.3.4.2.3.3-10: MeasObjectEUTRA-CGI (Step 5, Table 8.3.4.2.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-CGI ::= SEQUENCE {			
carrierFreq SEQUENCE {}	Downlink EARFCN of Cell 3		
cellForWhichToReportCGI	PhysCellId of Cell 3		
}			

Table 8.3.4.2.3.3-11: ReportConfig-CGI (Step 5, Table 8.3.4.2.3.2-2)

Derivation Path: 36.508, Table 4.6.6-7 ReportConfigEUTRA-PERIODICAL			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose	reportCGI		
}			
}			
reportQuantity	sameAsTriggerQuantity		
reportAmount	r1		
si-RequestForHO	setup		
}			

Table 8.3.4.2.3.3-12: *MeasurementReport* (Step 7, Table 8.3.4.2.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysCellId of Cell 3		
cgi-Info[1] SEQUENCE {			
cellGlobalId	cellGlobalId formed from the first entry in 'plmn-IdentityList' and 'cellIdentity' of Cell 3		
trackingAreaCode	trackingAreaCode of Cell 3		
plmn-IdentityList	Not present		
}			
measResult[1] SEQUENCE {			
rsrpResult	Not present		
rsrqResult	Not present		
additionalSI-Info-r9 SEQUENCE {			
csg-MemberStatus	Not present		
csg-Identity	'000 0000 0000 0000 0000 0000 0010'B	CSG ID of Cell 3	
}			
}			
}			
}			
}			
}			
}			
}			
}			

8.3.4.3 Inter-frequency SI acquisition / Member hybrid cell

8.3.4.3.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state}
ensure that {
  when { UE is configured to acquire the System Information of a neighbour member hybrid cell }
   then { UE acquires the System Information of the cell included in the associated measurement
object and reports the global cell identity, the TAI, the MemberStatus and the CSG ID in the
MeasurementReport}
}
```

8.3.4.3.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.5.2.3, 5.5.3.1, 5.5.5 and TS 36.133, clause 8.1.2.3.5.1.

[TS 36.331, clause 5.5.2.3]

...

The UE shall:

...

2> if the *triggerType* is set to '*periodical*' and the *purpose* is set to '*reportCGI*' in the *reportConfig* associated with this *measId*:

3> if the *measObject* associated with this *measId* concerns E-UTRA:

4> if the *si-RequestForHO* is included in the *reportConfig* associated with this *measId*:

5> start timer T321 with the timer value set to 150 ms for this *measId*;

...

[TS 36.331, clause 5.5.3.1]

...

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *purpose* for the associated *reportConfig* is set to '*reportCGI*':

3> if *si-RequestForHO* is configured for the associated *reportConfig*:

4> perform the corresponding measurements on the frequency and RAT indicated in the associated *measObject* using autonomous gaps as necessary;

...

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is an E-UTRAN cell:

4> try to acquire the CSG identity, if the CSG identity is broadcast in the concerned cell;

4> if *si-RequestForHO* is not configured for the associated *reportConfig*:

5> try to acquire the list of additional PLMN Identities, as included in the *plmn-IdentityList*, if multiple PLMN identities are broadcast in the concerned cell;

...

[TS 36.331, clause 5.5.5]

...

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

...

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

...

3> else if the *purpose* is set to '*reportCGI*':

4> if the mandatory present fields of the *cgi-Info* for the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* have been obtained:

5> if the cell broadcasts a CSG identity:

6> include the *csg-Identity*;

6> include the *csg-MemberStatus* and set it to '*member*' if the CSG identity is included in the UE's CSG whitelist;

5> if the '*si-RequestForHO*' is configured within the *reportConfig* associated with this *measId*:

6> include the *cgi-Info* containing all the fields that have been successfully acquired, except for the *plmn-IdentityList*;

5> else:

6> include the *cgi-Info* containing all the fields that have been successfully acquired;

...

[TS 36.133, clause 8.1.2.3.5.1]

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 36.331 [2]. Note that a UE is not required to use autonomous gap if si-RequestForHO is set to false. If autonomous gaps are used for measurement with the purpose of 'reportCGI', regardless of whether DRX is used or not, the UE shall be able to identify a new CGI of 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 Section 9.1 are fulfilled for a corresponding Band,
- SCH_RP|dBm $\geq$ -125 dBm for Bands 1, 4, 6, 10, 11, 18, 19, 21 and SCH Ês/Iot $\geq$ -4 dB,
- SCH_RP|dBm $\geq$ -124 dBm for Band 9 and SCH Ês/Iot $\geq$ -4 dB,
- SCH_RP|dBm $\geq$ -123 dBm for Bands 2, 5, 7 and SCH Ês/Iot $\geq$ -4 dB,
- SCH_RP|dBm $\geq$ -122 dBm for Bands 3, 8, 12, 13, 14, 17, 20 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 [2] 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/NACK transmitted during identification of a new CGI of E-UTRA cell.

8.3.4.3.3 Test description

8.3.4.3.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 3 are E-UTRA cells.
- Cell 1 is a non CSG cell.
- Cell 3 is a hybrid cell.
- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA Cell 1.
- System information combination 13 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA Cell 3.

UE:

- The UE's Allowed CSG list contains the CSG ID of the Cell 3.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.4.3.3.2 Test procedure sequence

Table 8.3.4.3.3.2-1 illustrates the downlink power levels to be applied for Cell 1 and Cell 3 at various time instants of the test execution. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.4.3.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 3 (DL only)	Remark
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-73	Power levels are such that entry condition for event A3 on Cell 3 is satisfied: $Mn+Ofn+Ocn-Hys>Ms+Ofs+Ocs+Off$

Table 8.3.4.3.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup intra LTE measurement and reporting for event A3 (inter frequency measurement) and set *timeAlignmentTimerDedicated* to *infinity*.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigrationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS re-adjusts the cell-specific reference signal levels according to row "T1" in table 8.3.4.3.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message to report event A3 with the measured RSRP value for Cell 3.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* including *reportCGI* and *si-RequestForHO* for Cell 3.	<--	*RRCConnectionReconfiguration*	-	-
6	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
7	Check: Does the UE transmit a *MeasurementReport* message with the System Information acquired on Cell 3 within 150 ms?	-->	*MeasurementReport*	1	P

8.3.4.3.3.3 Specific message contents

Table 8.3.4.3.3.3-1: Conditions for Tables 8.3.4.3.3.3-2

Condition	Explanation
Cell 1	This condition applies to system information transmitted on Cell 1.
Cell 3	This condition applies to system information transmitted on Cell 3.

Table 8.3.4.3.3.3-2: *SystemInformationBlockType1* for Cells 1 and 3 (preamble and all steps, Table 8.3.4.3.3.2-2)

Derivation Path: 36.508 clause 4.4.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType1 ::= SEQUENCE {			
cellAccessRelatedInfo SEQUENCE {			
csg-Indication	FALSE		
csg-Identity	Not present		Cell 1
	'000 0000 0000 0000 0000 0000 0010'B		Cell 3
}			
}			

Table 8.3.4.3.3.3-3: *SystemInformationBlockType4* for Cell 3 (preamble and all steps, Table 8.3.4.2.3.2-2)

Derivation Path: 36.508 clause 4.4.3.3, Table 4.4.3.3-3			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType4 ::= SEQUENCE {			
csg-PhysCellIdRange ::= SEQUENCE {			
start	4		
range	Not present		
}			
}			

Table 8.3.4.3.3.3-4: *RRCConnectionReconfiguration* (Step 1, Table 8.3.4.3.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated ::= SEQUENCE {			
srb-ToAddModList	Not present		
drb-ToAddModList	Not present		
drb-ToReleaseList	Not present		
mac-MainConfig CHOICE {			
explicitValue SEQUENCE {			
ul-SCH-Config	Not present		
drx-Config	Not present		
timeAlignmentTimerDedicated	infinity		
phr-Config	Not present		
}			
}			
sps-Config	Not present		
physicalConfigDedicated	Not present		
}			

Table 8.3.4.3.3.3-5: *MeasConfig* (Step 1, Table 8.3.4.3.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-1 with condition INTER-FREQ			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList ::= SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f2		
measObject[2]	MeasObjectEUTRA-GENERIC(f2)		
}			
reportConfigToAddModList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfig-A3-H		
}			
measIdToAddModList ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f2		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

Table 8.3.4.3.3.3-6: ReportConfig-A3-H (Step 1, Table 8.3.4.3.3.2-2)

Derivation path: 36.508 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 {			
}			
}			
timeToTrigger	ms0		
}			
}			
reportQuantity	sameAsTriggerQuantity		
}			

Table 8.3.4.3.3.3-7: *MeasurementReport* (Step 4, Table 8.3.4.3.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 3	
physCellId	PhysCellId of Cell 3		
cgi-Info	Not present		
measResult SEQUENCE{			
rsrpResult	(0..97)		
rsrqResult	Not present		
}			
}			
}			
}			
}			
}			

Table 8.3.4.3.3.3-8: *RRCConnectionReconfiguration* (Step 5, Table 8.3.4.3.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.4.3.3.3-9: *MeasConfig* (Step 5, Table 8.3.4.3.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measIdToAddModList ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	2		
measObjectId[1]	IdMeasObject-f2		
reportConfigId[1]	ReportConfigId-CGI		
}			
measObjectToAddModList ::= SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f2		
measObject[1]	MeasObjectEUTRA-CGI		
}			
reportConfigToRemoveList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {			
reportConfigId	IdReportConfig-A3		
}			
reportConfigToAddModList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	ReportConfigId-CGI		
reportConfig[1]	ReportConfig-CGI		
}			
measGapConfig CHOICE {			
release	NULL		
}			
}			

Table 8.3.4.3.3.3-10: MeasObjectEUTRA-CGI (Step 5, Table 8.3.4.3.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-2			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectEUTRA-CGI ::= SEQUENCE {			
carrierFreq SEQUENCE {}	Downlink EARFCN of Cell 3		
cellForWhichToReportCGI	PhysCellId of Cell 3		
}			

Table 8.3.4.3.3.3-11: ReportConfig-CGI (Step 5, Table 8.3.4.3.3.2-2)

Derivation Path: 36.508, Table 4.6.6-7 ReportConfigEUTRA-PERIODICAL			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose	reportCGI		
}			
}			
reportQuantity	sameAsTriggerQuantity		
reportAmount	r1		
si-RequestForHO	setup		
}			

Table 8.3.4.3.3.3-12: *MeasurementReport* (Step 7, Table 8.3.4.3.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysCellId of Cell 3		
cgi-Info[1] SEQUENCE {			
cellGlobalId	cellGlobalId formed from the first entry in 'plmn-IdentityList' and 'cellIdentity' of Cell 3		
trackingAreaCode	trackingAreaCode of Cell 3		
plmn-IdentityList	Not present		
}			
measResult[1] SEQUENCE {			
rsrpResult	Not present		
rsrqResult	Not present		
additionalSI-Info-r9 SEQUENCE {			
csg-MemberStatus	member		
csg-Identity	'000 0000 0000 0000 0000 0000 0010'B	CSG ID of Cell 3	
}			
}			
}			
}			
}			
}			
}			
}			

8.3.4.4 Inter-RAT SI acquisition / RRC_CONNECTED / UMTS member CSG cell

8.3.4.4.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE is configured to acquire the System Information of a neighbour UTRA member CSG cell }
   then { UE acquires the System Information of the cell included in the associated measurement
object and reports the global cell identity, the LAC, the RAC, the CSG ID and its membership status
in the MeasurementReport }
}
```

8.3.4.4.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.5.2.3, 5.5.3.1 and 5.5.5.

[TS 36.331, clause 5.5.2.3]

...

The UE shall:

...

2> if the *triggerType* is set to '*periodical*' and the *purpose* is set to '*reportCGI*' in the *reportConfig* associated with this *measId*:

…

3> else if the *measObject* associated with this *measId* concerns UTRA:

4> if the *si-RequestForHO* is included in the *reportConfig* associated with this *measId*:

5> start timer T321 with the timer value set to [1 second] for this *measId*;

...

[TS 36.331, clause 5.5.3.1]

...

The UE shall:

1> for each *measId* included in the *measIdList* within *VarMeasConfig*:

2> if the *purpose* for the associated *reportConfig* is set to '*reportCGI*':

3> if *si-RequestForHO* is configured for the associated *reportConfig*:

4> perform the corresponding measurements on the frequency and RAT indicated in the associated *measObject* using autonomous gaps as necessary;

...

3> if the cell indicated by the *cellForWhichToReportCGI* included in the associated *measObject* is a UTRAN cell:

4> try to acquire the LAC, the RAC and the list of additional PLMN Identities, if multiple PLMN identities are broadcast in the concerned cell;

4> try to acquire the CSG identity, if the CSG identity is broadcast in the concerned cell;

...

[TS 36.331, clause 5.5.5]

...

For the *measId* for which the measurement reporting procedure was triggered, the UE shall set the *measResults* within the *MeasurementReport* message as follows:

...

1> if there is at least one applicable neighbouring cell to report:

2> set the *measResultNeighCells* to include the best neighbouring cells up to *maxReportCells* in accordance with the following:

...

3> else if the *purpose* is set to '*reportCGI*':

4> if the mandatory present fields of the *cgi-Info* for the cell indicated by the *cellForWhichToReportCGI* in the associated *measObject* have been obtained:

5> if the cell broadcasts a CSG identity:

6> include the *csg-Identity*;

6> include the *csg-MemberStatus* and set it to '*member*' if the CSG identity is included in the UE's CSG whitelist;

5> if the '*si-RequestForHO*' is configured within the *reportConfig* associated with this *measId*:

6> include the *cgi-Info* containing all the fields that have been successfully acquired, except for the *plmn-IdentityList*;

5> else:

6> include the *cgi-Info* containing all the fields that have been successfully acquired;

...

8.3.4.4.3 Test description

8.3.4.4.3.1 Pre-test conditions

System Simulator:

- Cell 1 is E-UTRA cell.
- Cell 5 is UTRA cell.
- Cell 1 is a non CSG cell.
- Cell 5 is a CSG cell.
- System information combination 4 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA Cell.

UE:

- The UE's Allowed CSG list contains the CSG ID of Cell 5.

Preamble:

- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.3.4.4.3.2 Test procedure sequence

Table 8.3.4.4.3.2-1 illustrates the downlink power levels to be applied for Cell 1 and Cell 5 at various time instants of the test execution. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.4.4.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 5 (DL only)	Remark
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-12.5	Power levels are such that entry condition for event B2 on Cell 5 is satisfied.

Table 8.3.4.4.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* to setup inter RAT measurement and reporting for event B2 and set *timeAlignmentTimerDedicated* to *infinity*.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigrationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS re-adjusts the cell-specific reference signal levels according to row "T1" in table 8.3.4.4.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message to report event B2 for Cell 5.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message including *measConfig* including *reportCGI* and *si-RequestForHO* for Cell 5.	<--	*RRCConnectionReconfiguration*	-	-
6	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
7	Check: Does the UE transmit a *MeasurementReport* message with the System Information acquired on Cell 5 within [1] s?	-->	*MeasurementReport*	1	P

8.3.4.4.3.3 Specific message contents

Table 8.3.4.4.3.3-1: Master Information Block for Cell 5 (preamble and all steps, Table 8.3.4.4.3.2-2)

Derivation Path: 34.108 clause 6.1.0a.3			
Information Element	**Value/remark**	**Comment**	**Condition**
- CSG Indicator	TRUE		

Table 8.3.4.4.3.3-2: System Information Block type 3 for Cell 5 (preamble and all steps, Table 8.3.4.4.3.2-2)

Derivation Path: 34.108 clause 6.1.0b			
Information Element	**Value/remark**	**Comment**	**Condition**
- CSG Identity	'000 0000 0000 0000 0000 0000 0010'B		
- CSG PSC Split Information			
- Start PSC	104		
- Number of PSCs	5		
- PSC Range 2 Offset	Not present		

Table 8.3.4.4.3.3-3: *RRCConnectionReconfiguration* (Step 1, Table 8.3.4.4.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated ::= SEQUENCE {			
srb-ToAddModList	Not present		
drb-ToAddModList	Not present		
drb-ToReleaseList	Not present		
mac-MainConfig CHOICE {			
explicitValue SEQUENCE {			
ul-SCH-Config	Not present		
drx-Config	Not present		
timeAlignmentTimerDedicated	infinity		
phr-Config	Not present		
}			
}			
sps-Config	Not present		
physicalConfigDedicated	Not present		
}			

Table 8.3.4.4.3.3-4: *MeasConfig* (Step 1, Table 8.3.4.4.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-1 with condition UTRAN			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measObjectToAddModList ::= SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	2 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)		
measObjectId[2]	IdMeasObject-f8		
measObject[2]	MeasObjectUTRA-f8		
}			
reportConfigToAddModList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-B2-UTRA		
reportConfig[1]	ReportConfigInterRAT-B2-UTRA(-69,-18)		
}			
measIdToAddModList ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f8		
reportConfigId[1]	IdReportConfig-B2-UTRA		
}			
}			

Table 8.3.4.4.3.3-5: MeasObjectUTRA-f8 (Step 1, Table 8.3.4.4.3.2-2)

Derivation path: 36.508 table 4.6.6-3 MeasObjectUTRA-GENERIC(f8)			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasObjectUTRA-GENERIC(f8) ::= SEQUENCE {			
carrierFreq	UTRA DL carrier frequency of the cell 5		
cellsToAddModList CHOICE {			
cellsToAddModListUTRA-FDD ::= SEQUENCE (SIZE (1.. maxCellMeas)) OF SEQUENCE {			UTRA-FDD
cellIndex [1]	1		
physCellId [1]	physicalCellIdentity – Cell 5		
}			
cellsToAddModListUTRA-TDD ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {			UTRA-TDD
cellIndex [1]	1		
physCellId [1]	physicalCellIdentity – Cell 5		
}			
}			
}			

Condition	Explanation
UTRA-FDD	UTRA-FDD cell environment
UTRA-TDD	UTRA-TDD cell environment

Table 8.3.4.4.3.3-6: ReportConfigInterRAT-B2-UTRA (Step 1, Table 8.3.4.4.3.2-2)

Derivation path: 36.508 clause 4.6.6 table 4.6.6-8 ReportConfigInterRAT-B2-UTRA(-69,-18)

Table 8.3.4.4.3.3-7: *MeasurementReport* (Step 4, Table 8.3.4.4.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	1		
measResultServCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry	Report Cell 5	
physCellId[1]	PhysCellId of Cell 5		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE{			
utra-RSCP	(-5..91)		UTRA-TDD
utra-EcN0	(0..49)		UTRA-FDD
}			
}			
}			
}			
}			
}			
}			

Condition	Explanation

UTRA-FDD	UTRA-FDD cell environment
UTRA-TDD	UTRA-TDD cell environment

Table 8.3.4.4.3.3-8: *RRCConnectionReconfiguration* (Step 5, Table 8.3.4.4.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8 with condition MEAS

Table 8.3.4.4.3.3-9: *MeasConfig* (Step 5, Table 8.3.4.4.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig ::= SEQUENCE {			
measIdToAddModList ::= SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	2		
measObjectId[1]	IdMeasObject-f8		
reportConfigId[1]	ReportConfigId-CGI		
}			
measObjectToAddModList ::= SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	1 entry		
measObjectId[1]	IdMeasObject-f8		
measObject[1]	MeasObjectUTRA-CGI		
}			
reportConfigToRemoveList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {			
reportConfigId	IdReportConfig-B2-UTRA		
}			
reportConfigToAddModList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	ReportConfigId-CGI		
reportConfig[1]	ReportConfigUTRA-CGI		
}			
measGapConfig CHOICE {			
release	NULL		
}			
}			

Table 8.3.4.4.3.3-10: MeasObjectUTRA-CGI (Step 5, Table 8.3.4.4.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-3			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasObjectUTRA-CGI ::= SEQUENCE {			
carrierFreq SEQUENCE {}	Downlink EARFCN of Cell 5		
cellForWhichToReportCGI	PhysCellId of Cell 5		
}			

Table 8.3.4.4.3.3-11: ReportConfigUTRA-CGI (Step 5, Table 8.3.4.4.3.2-2)

Derivation Path: 36.508, Table 4.6.6-9 ReportConfigInterRAT-PERIODICAL			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigInterRAT-PERIODICAL ::= SEQUENCE {			
triggerType CHOICE {			
periodical SEQUENCE {			
purpose	reportCGI		
}			
}			
reportAmount	r1		
si-RequestForHO	setup		
}			

Table 8.3.4.4.3.3-12: *MeasurementReport* (Step 7, Table 8.3.4.4.3.2-2)

Derivation path: 36.508 4.6.1 table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
measurementReport-r8 SEQUENCE {			
measResults ::= SEQUENCE {			
measId	2		
measResultServCell SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysCellId of Cell 5		
cgi-Info[1] SEQUENCE {			
cellGlobalId	cellGlobalId formed from 'PLMN Identity' and 'Cell Identity' of Cell 5		
locationAreaCode	locationAreaCode of Cell 5		
routingAreaCode	routingAreaCode of Cell 5		
plmn-IdentityList	Not present		
}			
measResult[1] SEQUENCE {			
utra-RSCP	Not present		
utra-EcN0	Not present		
additionalSI-Info-r9 SEQUENCE {			
csg-MemberStatus	member		
csg-Identity	'000 0000 0000 0000 0000 0000 0010'B	CSG ID of Cell 5	
}			
}			
}			
}			
}			
}			
}			
}			

8.3.4.5 Inter-frequency E-UTRAN FDD – FDD / CSG Proximity Indication

8.3.4.5.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE is configured with the proximity indicator control by sending the
RRCConnectionReconfiguration message with reportProximityConfig and the UE is not in the vicinity of
the CSG cell}
   then { UE is not expected to send any ProximityIndication message set to "entering" proximity }
}
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE is configured with the proximity indicator control by sending the
RRCConnectionReconfiguration message with reportProximityConfig and the UE is in the vicinity of the
CSG cell}
   then { The UE is expected to send a ProximityIndication message set to "entering" proximity }
```

```
}
```

(3)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE is configured with the proximity indicator control by sending the
RRCConnectionReconfiguration message with reportProximityConfig and the UE leaves the proximity of
the CSG cell }
   then { The UE is expected to send a ProximityIndication message set to "leaving" proximity }
}
```

8.3.4.5.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.14.1, 5.3.14.2 and 5.3.14.3, and TS 36.133, clause 6.4.1, 6.4.2, A.8.21.1, and A.8.21.2.

[TS 36.331, clause 5.3.14.1]

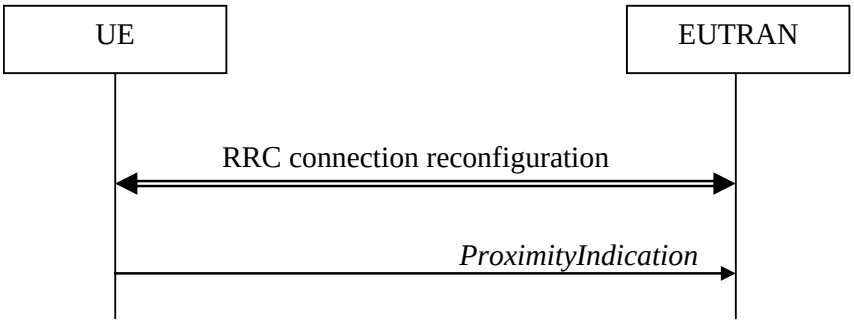

Figure 5.3.14.1-1: Proximity indication

The purpose of this procedure is to indicate that the UE is entering or leaving the proximity of one or more CSG member cells. The detection of proximity is based on an autonomous search function as defined in TS 36.304 [4].

[TS 36.331, clause 5.3.14.2]

A UE in RRC_CONNECTED shall:

1> if the UE enters the proximity of one or more CSG member cell(s) on an E-UTRA frequency while proximity indication is enabled for such E-UTRA cells; or

1> if the UE enters the proximity of one or more CSG member cell(s) on an UTRA frequency while proximity indication is enabled for such UTRA cells; or

1> if the UE leaves the proximity of all CSG member cell(s) on an E-UTRA frequency while proximity indication is enabled for such E-UTRA cells; or

1> if the UE leaves the proximity of all CSG member cell(s) on an UTRA frequency while proximity indication is enabled for such UTRA cells:

2> if the UE has previously not transmitted a *ProximityIndication* for the RAT and frequency during the current RRC connection, or if more than 5 s has elapsed since the UE has last transmitted a *ProximityIndication* (either entering or leaving) for the RAT and frequency:

3> initiate transmission of the *ProximityIndication* message in accordance with 5.3.14.3;

NOTE: In the conditions above, "if the UE enters the proximity of one or more CSG member cell(s)" includes the case of already being in the proximity of such cell(s) at the time proximity indication for the corresponding RAT is enabled.

[TS 36.331, clause 5.3.14.3]

The UE shall set the contents of *ProximityIndication* message as follows:

1> if the UE applies the procedure to report entering the proximity of CSG member cell(s):

2> set *type* to *entering*;

1> else if the UE applies the procedure to report leaving the proximity of CSG member cell(s):

2> set *type* to *leaving*;

1> if the proximity indication was triggered for one or more CSG member cell(s) on an E-UTRA frequency:

2> set the *carrierFreq* to *eutra* with the value set to the E-ARFCN value of the E-UTRA cell(s) for which proximity indication was triggered;

1> else if the proximity indication was triggered for one or more CSG member cell(s) on a UTRA frequency:

2> set the *carrierFreq* to *utra* with the value set to the ARFCN value of the UTRA cell(s) for which proximity indication was triggered;

The UE shall submit the *ProximityIndication* message to lower layers for transmission.

[TS 36.133, clause 6.4.1]

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

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

[TS 36.133, clause 6.4.2]

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

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

There is no need for statistical testing of this requirement.

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

[TS 36.133, clause A.8.21.1]

The purpose of this test is to verify the UE has implemented properly the feature for indicating that the UE is entering or leaving the proximity of one or more CSG member cells based on proximity detection with an autonomous search function, as defined by the requirements in Section 6.4.

The test case consists of three successive segments: Test Preparation, Negative Test, and Positive Test. The test scenario comprises of two E-UTRAN FDD cells on different carriers. Cell 1 represents the serving cell and Cell 2 the CSG cell. Cell 1 is active during the whole test, while Cell 2 is only active in time duration T1 in the Test Preparation. The description of the test procedure is shown in Table A.8.21-1. The general test parameters and cell specific test parameters for the handover from serving cell to CSG cell in Test Preparation and the proximity detection are presented in Table A.8.21-2 and Table A.8.21-3 respectively.

Table A.8.21-1: Description of the test procedures

Parameter	Cell Status	Comment
Test Preparation		
Initial Condition	Cell 1 is active	Clean up the UE memory to be free from previously stored cell information for proximity detection. Configure the UE to include Cell 2's CSG Identity in its whitelist. Turn on the UE and set up connection between the UE and Cell 1.
Time duration T1	Cell 1 and Cell 2	Turn on Cell 2 at the start of T1. Perform manual CSG selection towards Cell 2. The UE is expected to store necessary information experienced during handover for later proximity detection.
End condition	Cell 1 is active	Turn off the UE. Turn off Cell 2.
Negative Test		
Initial Condition	Cell 1 is active	Re-Configure Cell 1 to a different global cell identity to simulate the UE is not in the vicinity of the CSG cell. Turn on the UE and set up connection between the UE and Cell 1.
Time duration T2	Cell 1 is active	Configure the UE with proximity indication control by sending the Reconfiguration message with ReportProximityConfig at the start of T2. The UE is not expected to report "entering" proximity in the negative test.
End condition	Cell 1 is active	Turn off the UE.
Positive Test		
Initial Condition	Cell 1 is active	Re-Configure Cell 1 to the same global cell identity as in the Test Preparation, under which the UE was manually selected towards the CSG cell. Turn on the UE and set up connection between the UE and Cell 1.
Time duration T3	Cell 1 and Cell 2 are active	Configure the UE with proximity indication control by sending the Reconfiguration message with reportProximityConfig at the start of T3. The UE is expected to report "entering" proximity before end of T3.
Time duration T4	Cell 1 is active	Re-Configure Cell 1 to a different global cell identity to simulate the situation that UE leaves the proximity of the CSG cell. The UE is expected to report "leaving" proximity before end of T4.
End condition	Cell 1 is active	Turn off the UE.

Table A.8.21-2: General test parameters for E-UTRAN FDD-FDD inter frequency cell proximity detection test case

Parameter	Unit	Value	Comment
PDSCH parameters		DL Reference Measurement Channel R.0 FDD	As specified in section A.3.1.1.1
PDSCH allocation	n_{PRB}	2—3	13—36
PCFICH/PDCCH/PHICH parameters		DL Reference Measurement Channel R.6 FDD	As specified in section A.3.1.2.1
A3-Offset	dB	-4	
Hysteresis	dB	0	
TimeToTrigger	s	0	
Filter coefficient		0	L3 filtering is not used
DRX		off	As specified in section A.3.3
PRACH configuration		4	As specified in table 5.7.1-2 in 3GPP TS 36.211
Access Barring Information	-	Not sent	No additional delays in random access procedure
Time offset between cells		3 ms	Asynchronous cells
Gap pattern configuration Id		0	As specified in Table 8.1.2.1-1 started before T1 starts
Time duration T1	s	[10]	Defined to give enough time for completing the handover from serving cell to the CSG cell successfully.
Time duration T2	s	[360]	Defined to be longer enough to see whether the UE will report enter “proximity” indication.
Time duration T3 Note 1	s	[<=360]	The time duration for a UE to report enters “proximity” when the UE is near a CSG cell.
Time duration T4 Note 1	s	[<=360]	The time duration for a UE to report leaving “proximity” when the UE is no longer nears a CSG cell.

Note 1: The maximum allowed time duration for the UE to decide either entering or leaving “proximity” is 360s. To reduce test time, T3 may end once UE reports entering “proximity” and T4 may end once UE reports leaving “proximity”.

Note 2: The test case assumes an environment where CSG proximity detection results not being impact by non-3GPP signals, such as GPS and WiFi. When the test case is being executed, the UE may ignore any radio signals which are not provided by the test setup which it would otherwise use in proximity estimation.

Table A.8.21-3: Cell specific test parameters for E-UTRAN FDD-FDD inter frequency cell proximity detection test case

Parameter	Unit	Cell 1				Cell 2			
		T1	T2	T3	T4	T1	T2	T3	T4

E-UARFCN		Channel 1				Channel 2			
CSG indicator		False				True	N/A	True	N/A
Physical cell global identity		1	2	1	3	3	N/A	N/A	N/A
CSG identity		Not sent				Sent	N/A	Sent	N/A
$BW_{channel}$	MHz	10				10			
OCNG Patterns defined in A.3.2.1.1 (OP.1 FDD) and in A.3.2.1.2 (OP.2 FDD)		OP.1 FDD	OP.2 FDD	OP.2 FDD	OP.2 FDD	OP. 2 FDD	N/A	OP.2 FDD	N/A
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	0	4	4	4	7	-inf	7	-inf
N_{oc} Note 2	dBm/15 kHz	-98				-98			
$\hat{E}_s / N_{oc}$	dB	0	4	4	4	7	-inf	7	-inf
RSRP Note 3	dBm/15 KHz	-98	-94	-94	-94	-91	-inf	-91	-inf
Propagation Condition		AWGN				AWGN			

Note 1: OCNG shall be used such that both cells are fully allocated and a constant total transmitted power spectral density is achieved for all OFDM symbols.

Note 2: Interference from other cells and noise sources not specified in the test is assumed to be constant over subcarriers and time and shall be modelled as AWGN of appropriate power for N_{oc} to be fulfilled.

Note 3: RSRP levels have been derived from other parameters for information purposes. They are not settable parameters themselves.

[TS 36.133, A.8.21.2]

The UE shall not send an "entering" proximity indication in T2 during Negative Test.

The UE shall send an "entering" proximity indication in T3 and send a "leaving" proximity indication in T4 during Positive Test.

8.3.4.5.3 Test description

8.3.4.5.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 2 and Cell 23 are used.
- Cell 1 and Cell 2 are not CSG cells.
- Cell 23 is a CSG cell.
- System information combination 7 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA Cell 23.

UE:

- The UE's Allowed CSG list contains the CSG ID of Cell 23.
- The UE memory shall be cleaned up the to be free from previously stored cell information for proximity detection [method how to achieve this is TBD].

- The UE non-3GPP radio receivers shall be switched off [method how to achieve this is TBD].

Preamble:

- The UE is in state Switched OFF (state 1) according to [18].

8.3.4.5.3.2 Test procedure sequence

Table 8.3.4.5.3.2-1 illustrates the downlink power levels to be applied for Cell 1, Cell 2 and Cell 23 at various time instants of the test execution. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.3.4.5.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 2	Cell 23	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	Off	Off	The power level values are assigned to such that camping on Cell 1 is guaranteed. Cell 2 and Cell 23 are “Off”.
T1	Cell-specific RS EPRE	dBm/15kHz	-85	Off	-79	
T2	Cell-specific RS EPRE	dBm/15kHz	- Off	-85	Off	The power level values are assigned to such that camping on Cell 2 is guaranteed. Cell 1 and Cell 23 are “Off”.
T3	Cell-specific RS EPRE	dBm/15kHz	-85	Off	Off	The power level values are assigned to such that camping on Cell 1 is guaranteed. Cell 2 and Cell 23 are “Off”.
T4	Cell-specific RS EPRE	dBm/15kHz	-85	Off	-79	
T5	Cell-specific RS EPRE	dBm/15kHz	-91	-85	Off	

Table 8.3.4.5.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS adjusts cell levels according to row T0 of Table 8.3.4.5.3.2-1	-	-	-	-
2	Power on the UE.	-	-	-	-
3-18	Steps 2 to 17 of the registration procedure described in TS 36.508 subclause 4.5.2.3 are performed on Cell 1. NOTE: The UE performs registration and the RRC connection is released.	-	-	-	-
19	The SS adjusts cell levels according to row T1 of Table 8.3.4.5.3.2-1	-	-	-	-
20	The UE is made to perform manual CSG ID selection and select Cell 23.	-	-	-	-
21-26	Steps 1 to 6 of the TAU procedure described in TS 36.508 subclause 6.4.2.7 are performed on Cell 23. NOTE: the UE performs a TAU and the RRC connection is released.	-	-	-	-
27	Power off the UE.	-	-	-	-
28	The SS adjusts cell levels according to row T2 of Table 8.3.4.5.3.2-1	-	-	-	-
29	Power on the UE.	-	-	-	-
30-45	Steps 2 to 17 of the registration procedure described in TS 36.508 subclause 4.5.2.3 are performed on Cell 2. NOTE: The UE performs registration and the RRC connection is released.	-	-	-	-
46-53	Steps 2 to 9 of the generic test procedure in TS 36.508 subclause 4.5.3.3 are performed on Cell 2. NOTE: The UE performs the establishment of the new data radio bearer associated with the default EPS bearer context.	-	-	-	-
54	The SS transmits an *RRCConnectionReconfiguration* message on Cell 2 including *proximityIndicationEUTRA-r9* set to enabled.	<--	*RRCConnectionReconfiguration*	-	-
55	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
56	Check: Does the UE transmit a *ProximityIndication* message with *type-r9* set to “entering” proximity on Cell 2 within [360]s?	-->	*ProximityIndication*	1	F
57	Power off the UE.				
58	The SS adjusts cell levels according to row T3 of Table 8.3.4.5.3.2-1	-	-	-	-
59	Power on the UE.	-	-	-	-
60-75	Steps 2 to 17 of the registration procedure described in TS 36.508 subclause 4.5.2.3 are performed on Cell 1. NOTE: The UE performs registration and the RRC connection is released.	-	-	-	-
76-83	Steps 2 to 9 of the generic test procedure in TS 36.508 subclause 4.5.3.3 are performed on Cell 1. NOTE: The UE performs the establishment of the new data radio bearer associated with the default EPS bearer context.	-	-	-	-
84	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 including *proximityIndicationEUTRA-r9* set to enabled.	<--	*RRCConnectionReconfiguration*	-	-
85	The UE transmits an *RRCConnectionReconfigurationComplete*	-->	*RRCConnectionReconfigurationComplete*	-	-

	message.				
86	The SS adjusts cell levels according to row T4 of Table 8.3.4.5.3.2-1	-	-	-	-
87	Check: Does the UE transmit a *ProximityIndication* message with *type-r9* set to "entering" proximity on Cell 1 within [360]s?	-->	*ProximityIndication*	2	P
88	The SS adjusts cell levels according to row T5 of Table 8.3.4.5.3.2-1	-	-	-	-
89	The SS transmits an *RRCConnectionReconfiguration* message to order the UE to perform intra frequency handover to Cell 2 and 2 including *proximityIndicationEUTRA-r9* set to enabled.	<--	*RRCConnectionReconfiguration*	-	-
90	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 2 to confirm the successful completion of the intra frequency handover.	-->	*RRCConnectionReconfigurationComplete*	-	-
91	Check: Does the UE transmit a *ProximityIndication* message with *type-r9* set to "leaving" proximity on Cell 2 within [360]s?	-->	*ProximityIndication*	3	P

8.3.4.5.3.3 Specific message contents

Table 8.3.4.5.3.3-1: *SystemInformationBlockType1* for Cell 23 (preamble and all steps, Table 8.3.4.5.3.2-2)

Derivation Path: 36.508 clause 4.4.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType1 ::= SEQUENCE {			
cellAccessRelatedInfo SEQUENCE {			
csg-Indication	TRUE		
csg-Identity	'000 0000 0000 0000 0000 0000 1011'B		
}			
}			

Table 8.3.4.5.3.3-2: *SystemInformationBlockType4* for Cell 23 (preamble and all steps, Table 8.3.4.5.3.2-2)

Derivation Path: 36.508 clause 4.4.3.3, Table 4.4.3.3-3			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType4 ::= SEQUENCE {			
csg-PhysCellIdRange ::= SEQUENCE {			
Start	2		
Range	n4		
}			
}			

Table 8.3.4.5.3.3-3: *RRCConnectionReconfiguration* (Step 54 and Step 84, Table 8.3.4.5.3.2-2)

Derivation Path: 36.508 clause 4.6.1 table 4.6.1-8			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
nonCriticalExtension SEQUENCE {			
nonCriticalExtension SEQUENCE {			
otherConfig-r9 ::= SEQUENCE {			
reportProximityConfig-r9			
proximityIndicationEUTRA-r9	enabled		
}			
nonCriticalExtension	Not present		
}			
}			
}			
}			
}			
}			

Table 8.3.4.5.3.3-4: *RRCConnectionReconfiguration* (step 89, Table 8.3.4.5.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition HO			
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
nonCriticalExtension SEQUENCE {			
nonCriticalExtension SEQUENCE {			
otherConfig-r9 ::= SEQUENCE {			
reportProximityConfig-r9			
proximityIndicationEUTRA-r9	enabled		
}			
nonCriticalExtension	Not present		
}			
}			
}			
}			
}			
}			

Table 8.3.4.5.3.3-5: *ProximityIndication* (Step 87 and Step 56, Table 8.3.4.5.3.2-2)

Derivation Path: 36.331 clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ProximityIndication-r9 ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
proximityIndication-r9 ::= SEQUENCE {			
type-r9	entering		
carrierFreq-r9 CHOICE {			
eutra-r9	Downlink EARFCN of Cell 23		
}			
nonCriticalExtension	Not present		
}			
}			
}			
}			

Table 8.3.4.5.3.3-6: *ProximityIndication* (Step 91, Table 8.3.4.5.3.2-2)

Derivation Path: 36.331 clause 6.2.2			
Information Element	**Value/remark**	**Comment**	**Condition**
ProximityIndication-r9 ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
proximityIndication-r9 ::= SEQUENCE {			
type-r9	leaving		
carrierFreq-r9 CHOICE {			
eutra-r9	Downlink EARFCN of Cell 23		
}			
nonCriticalExtension	Not present		
}			
}			
}			
}			