8 RRC

8.1 RRC connection management procedures

8.1.1 Paging

8.1.1.1 RRC / Paging for connection in idle mode

8.1.1.1.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_IDLE state }
ensure that {
  when { UE receives a Paging message including an ue-Identity set an unmatched S-TMSI i.e. other
than the one allocated to the UE at the UE registration procedure }
    then { UE does not establish an RRC connection }
            }
```

(2)

```
with { UE in E-UTRA RRC_IDLE state }
ensure that {
  when { UE receives a Paging message including an ue-Identity set to the S-TMSI which was allocated
to the UE at the UE registration procedure }
    then { UE establishes an RRC connection }
            }
```

8.1.1.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.2.3, 5.3.3.2, 5.3.3.3 and 5.3.3.4.

[TS 36.331, clause 5.3.2.3]

Upon receiving the *Paging* message, the UE shall:

1> if in RRC_IDLE, for each of the *PagingRecord*, if any, included in the *Paging* message:

2> if the *ue-Identity* included in the *PagingRecord* matches one of the UE identities allocated by upper layers:

3> forward the *ue-Identity*, and the *cn-Domain* to the upper layers.

...

[TS 36.331, clause 5.3.3.2]

The UE initiates the procedure when upper layers request establishment of an RRC connection while the UE is in RRC_IDLE.

Upon initiation of the procedure, the UE shall:

...

1>if access to the cell, as specified above, is not barred:

2> apply the default physical channel configuration as specified in 9.2.4;

2> apply the default semi-persistent scheduling configuration as specified in 9.2.3;

2> apply the default MAC main configuration as specified in 9.2.2;

2> apply the CCCH configuration as specified in 9.1.1.2;

2> apply the *timeAlignmentTimerCommon* included in *SystemInfoBlockType2*;

2> start timer T300;

2> initiate transmission of the *RRCConnectionRequest* message in accordance with 5.3.3.3;

NOTE 2: Upon initiating the connection establishment procedure, the UE is not required to ensure it maintains up to date system information applicable only for UEs in RRC_IDLE state. However, the UE needs to perform system information acquisition upon cell re-selection.

...

[TS 36.331, clause 5.3.3.3]

The UE shall set the contents of *RRCConnectionRequest* message as follows:

1> set the *ue-Identity* as follows:

2> if upper layers provide an S-TMSI:

3> set the *ue-Identity* to the value received from upper layers;

2> else:

3> draw a random value in the range 0 .. 2^{40}-1 and set the *ue-Identity* to this value;

NOTE 1: Upper layers provide the S-TMSI if the UE is registered in the TA of the current cell.

1> set the *establishmentCause* in accordance with the information received from upper layers;

The UE shall submit the *RRCConnectionRequest* message to lower layers for transmission.

The UE shall continue cell re-selection related measurements as well as cell re-selection evaluation. If the conditions for cell re-selection are fulfilled, the UE shall perform cell re-selection as specified in 5.3.3.5.

[TS 36.331, clause 5.3.3.4]

NOTE: Prior to this, lower layer signalling is used to allocate a C-RNTI. For further details see TS 36.321 [6];

The UE shall:

1> perform the radio resource configuration procedure in accordance with the received *radioResourceConfigDedicated* and as specified in 5.3.10;

1> if stored, discard the cell reselection priority information provided by the idleModeMobilityControlInfo or inherited from another RAT;

1> stop timer T300;

1> stop timer T302, if running;

1> stop timer T303, if running;

1> stop timer T305, if running;

1> perform the actions as specified in 5.3.3.7;

1> stop timer T320, if running;

1> enter RRC_CONNECTED;

1> stop the cell re-selection procedure;

1> set the content of *RRCConnectionSetupComplete* message as follows:

2> set the *selectedPLMN-Identity* to the PLMN selected by upper layers (see TS 23.122 [11], TS 24.301 [35]) from the PLMN(s) included in the *plmn-IdentityList* in *SystemInformationBlockType1*;

2> if upper layers provide the 'Registered MME', include and set the *registeredMME* as follows:

3> if the PLMN identity of the '*Registered MME'* is different from the PLMN selected by the upper layers:

4> include the *plmnIdentity* in the *registeredMME* and set it to the value of the PLMN identity in the 'Registered MME' received from upper layers;

3> set the *mmegi* and *the mmec* to the value received from upper layers;

2> set the *dedicatedInfoNAS* to include the information received from upper layers;

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

8.1.1.1.3 Test description

8.1.1.1.3.1 Pre-test conditions

System Simulator:

- Cell 1.

UE:

None.

Preamble:

- The UE is in state Registered, Idle mode (state 2) according to [18].

8.1.1.1.3.2 Test procedure sequence

Table 8.1.1.1.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits a *Paging* message including an unmatched identity (incorrect S-TMSI).	<--	*Paging*	-	-
2	Check: Does the UE transmit an *RRCConnectionRequest* message within 5 s?	-->	*RRCConnectionRequest*	1	F
3	The SS transmits a *Paging* message including a matched identity.	<--	*Paging*	-	-
4	Check: Does the UE transmit an *RRCConnectionRequest* message?	-->	*RRCConnectionRequest*	2	P
5	The SS transmits an *RRCConnectionSetup* message.	<--	*RRCConnectionSetup*	-	-
6	Check: Does the UE transmit an *RRCConnectionSetupComplete* message including SERVICE REQUEST to confirm the successful completion of the connection establishment?	-->	*RRCConnectionSetupComplete*	2	P
6A-6D	Steps 6 to 9 of the generic radio bearer establishment procedure (TS 36.508 4.5.3.3-1) are executed to successfully complete the service request procedure.	-	-	-	-
7	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	-

8.1.1.1.3.3 Specific message contents

Table 8.1.1.1.3.3-1: *Paging* (step 1, Table 8.1.1.1.3.2-1)

Derivation Path: 36.508 Table 4.6.1-7			
Information Element	**Value/remark**	**Comment**	**Condition**
Paging ::= SEQUENCE {			
pagingRecordList SEQUENCE (SIZE (1..maxPageRec)) OF SEQUENCE {	1 entry		
ue-Identity[1] CHOICE {			
s-TMSI SEQUENCE {			
mmec	Set to the different value from the S-TMSI of the UE		
m-TMSI	Set to the different value from the S-TMSI of the UE		
}			
}			
}			
}			

Table 8.1.1.1.3.3-2: *RRCConnectionRequest* (step 4, Table 8.1.1.1.3.2-1)

Derivation Path: 36.508 Table 4.6.1-16			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionRequest-r8 SEQUENCE {			
establishmentCause	mt-Access		
}			
}			
}			

8.1.1.2 RRC / Paging for notification of BCCH modification in idle mode

8.1.1.2.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_IDLE state }
ensure that {
  when { UE receives a Paging message including a systemInfoModification }
    then { UE re-acquires and applies the new system information about the correct prach-ConfigIndex
in random access }
            }
```

8.1.1.2.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.2.3, 5.2.2.3, and 5.2.2.4.

[TS 36.331, clause 5.3.2.3]

Upon receiving the *Paging* message, the UE shall:

1> if in RRC_IDLE, for each of the *PagingRecord, if any* included in the *Paging* message:

2> if the *ue-Identity* included in the *PagingRecord* matches one of the UE identities allocated by upper layers:

3> forward the *ue-Identity* and the *cn-Domain* to the upper layers;

1> if the *systemInfoModification* is included:

2> re-acquire the required system information using the system information acquisition procedure as specified in 5.2.2.

...

[TS 36.331, clause 5.2.2.3]

The UE shall:

1> ensure having a valid version, as defined below, of (at least) the following system information, also referred to as the 'required' system information:

2> if in RRC_IDLE:

3> the *MasterInformationBlock and SystemInformationBlockType1* as well as *SystemInformationBlockType2* through *SystemInformationBlockType8*, depending on support of the concerned RATs;

...

[TS 36.331, clause 5.2.2.4]

The UE shall:

1> apply the specified BCCH configuration defined in 9.1.1.1;

1> if the procedure is triggered by a system information change notification:

2> start acquiring the required system information, as defined in 5.2.2.3, from the beginning of the modification period following the one in which the change notification was received;

...

The UE may apply the received SIBs immediately, i.e. the UE does not need to delay using a SIB until all SI messages have been received. The UE may delay applying the received SIBs until completing lower layer procedures associated with a received or a UE originated RRC message, e.g. an ongoing random access procedure.

NOTE 3: While attempting to acquire a particular SIB, if the UE detects from *schedulingInfoList* that it is no longer present, the UE should stop trying to acquire the particular SIB.

8.1.1.2.3 Test description

8.1.1.2.3.1 Pre-test conditions

System Simulator:

- Cell 1.

UE:

None.

Preamble:

- The UE is in state Registered, Idle mode (state 2) according to [18].

8.1.1.2.3.2 Test procedure sequence

Table 8.1.1.2.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits a *Paging* message including a matched identity.	<--	*Paging*	-	-
2	Check: Does the UE transmit an *RRCConnectionRequest* message?	-->	*RRCConnectionRequest*	1	P
3	The SS transmits an *RRCConnectionSetup* message.	<--	*RRCConnectionSetup*	-	-
3A	The UE transmits an *RRCConnectionSetupComplete* message. This message includes a SERVICE REQUEST message.	-->	*RRCConnectionSetupComplete*	-	-
3B	The SS transmits a *SecurityModeCommand* message.	<--	*SecurityModeCommand*	-	-
3C	The UE transmits a *SecurityModeComplete* message.	-->	*SecurityModeComplete*	-	-
3D	The SS transmits an *RRCConnectionReconfiguration* message.	<--	*RRCConnectionReconfiguration*	-	-
3E	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3F	The SS transmits an *RRCConnectionRelease* message.	<--	*RRCConnectionRelease*	-	-
3G	Wait for 5 s for the UE to enter E-UTRA RRC_IDLE state.	-	-	-	-
4	The SS changes the *prach-ConfigIndex* in the system information	-	-	-	-
5	The SS transmits a Paging message including a *systemInfoModification*.	<--	*Paging*	-	-
6	Wait for 15s for the UE to receive system information.	-	-	-	-
7	The SS transmits a *Paging* message including a matched identity.	<--	*Paging*	-	-
7A	Check: Does the UE re-transmit a random access using prach-ConfigIndex given in step 4?	-	-	1	P
8	The UE transmit an *RRCConnectionRequest* message.	-->	*RRCConnectionRequest*	-	-
9	The SS transmits an *RRCConnectionSetup* message.	<--	*RRCConnectionSetup*	-	-
9A	The UE transmits an *RRCConnectionSetupComplete* message. This message includes a SERVICE REQUEST message.	-->	*RRCConnectionSetupComplete*	-	-
9B	The SS transmits a *SecurityModeCommand* message.	<--	*SecurityModeCommand*	-	-
9C	The UE transmits a *SecurityModeComplete* message.	-->	*SecurityModeComplete*	-	-
9D	The SS transmits an *RRCConnectionReconfiguration* message.	<--	*RRCConnectionReconfiguration*	-	-
9E	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
9F	The SS transmits an *RRCConnectionRelease* message.	<--	*RRCConnectionRelease*	-	-
9G	Wait for 5 s for the UE to enter E-UTRA RRC_IDLE state.	-	-	-	-
10	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.2 indicate that the UE is in E-UTRA RRC_IDLE state on Cell 1?	-	-	1	-

8.1.1.2.3.3 Specific message contents

Table 8.1.1.2.3.3-1: *RRCConnectionRequest* (step 2 and step 8, Table 8.1.1.2.3.2-1)

Derivation Path: 36.508 Table 4.6.1-16			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionRequest-r8 SEQUENCE {			
establishmentCause	mt-Access		
}			
}			
}			

Table 8.1.1.2.3.3-2A: *RRCConnectionReconfiguration* (step 3D and step 9D, Table 8.1.1.2.3.2-1)

Derivation Path: 36.508 Table 4.6.1-8, condition SRB2-DRB(1, 0)

Table 8.1.1.2.3.3-2: *Paging* (step 5, Table 8.1.1.2.3.2-1)

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

Table 8.1.1.2.3.3-2A: *SystemInformationBlockType1* (step 6, table 8.1.1.2.3.2-1)

Derivation path: 36.508 Table 4.4.3.2-3			
Information Element	**Value/Remark**	**Comment**	**Condition**
SystemInformationBlockType1 ::= SEQUENCE {			
systemInfoValueTag	1	Default value is 0	
}			

Table 8.1.1.2.3.3-3: *SystemInformationBlockType2* (step 6, Table 8.1.1.2.3.2-1)

Derivation Path: 36.508 Table 4.4.3.3-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType2 ::= SEQUENCE {			
radioResourceConfigCommon SEQUENCE {			
prach-Config SEQUENCE {			
prach-ConfigInfo SEQUENCE {			
prach-ConfigIndex	5		FDD
prach-ConfigIndex	52	Set to index which denote subframe numbers different from the default one.	TDD
}			
}			
}			
}			

Condition	Explanation
FDD	FDD cell environment
TDD	TDD cell environment

8.1.1.3 RRC / Paging for connection in idle mode / Multiple paging records

8.1.1.3.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_IDLE state }
ensure that {
  when { UE receives a Paging message including only unmatched identities }
    then { UE does not establish any RRC connection }
           }
```

(2)

```
with { UE in E-UTRA RRC_IDLE state }
ensure that {
  when { UE receives a Paging message including any matched identity }
    then { UE establishes an RRC connection }
           }
```

8.1.1.3.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.2.3, 5.3.3.2, 5.3.3.3 and 5.3.3.4.

[TS 36.331, clause 5.3.2.3]

Upon receiving the *Paging* message, the UE shall

1> If in RRC_IDLE, for each of the Paging records included in the *Paging* message:

2> If the *ue-identity* included in the *pagingRecordList* matches one of the UE identities allocated by upper layers:

3> forward the *ue-Identity*, the *cn-Domain* and the *pagingCause* to the upper layers.

...

[TS 36.331, clause 5.3.3.2]

The UE initiates the procedure when upper layers request establishment of an RRC connection while the UE is in RRC_IDLE state.

Upon initiation of the procedure, the UE shall:

...

1> If access to the cell, as specified above, is not barred:

2> apply the default configuration applicable for the *antennaInformation* as specified in 9.2.3, until explicitly receiving a configuration;

2> start timer T300;

2> initiate transmission of the *RRCConnectionRequest* message in accordance with 5.3.3.3;

NOTE 2: Upon initiating the connection establishment procedure, the UE is not required to ensure it maintains up to date system information applicable only for UEs in RRC_IDLE state. However, the UE needs to perform system information acquisition upon re-selection.

...

[TS 36.331, clause 5.3.3.3]

The UE shall set the contents of *RRCConnectionRequest* message as follows:

1> set the IE *ue-Identity* as follows:

2> if upper layers provide an S-TMSI:

3> set the *ue-Identity* to the value received from upper layers;

2> else

3> draw a random value and set the *ue-Identity* to this value;

NOTE 1 Upper layers provide the S-TMSI if the UE is registered in the TA of the current cell.

1> Set the *establishmentCause* in accordance with the information received from upper layers;

The UE shall submit the *RRCConnectionRequest* message to lower layers for transmission.

The UE shall continue cell re-selection related measurements as well as cell re-selection evaluation. If the conditions for cell re-selection are fulfilled, the UE shall perform cell re-selection as specified in 5.3.3.5.

[TS 36.331, clause 5.3.3.4]

NOTE: Prior to this, lower layers allocate a C-RNTI. For further details see TS 36.321 [6];

The UE shall:

1> establish SRB1 in accordance with the received *radioResourceConfiguration* and as specified in 5.3.10;

1> if stored, discard the Inter-frequency priority information and the Inter-RAT priority information provided via dedicated signalling using the IE idleModeMobilityControlInfo;

1> stop timer T300;

1> stop timer T302, if running;

1> stop timer T303, if running;

1> stop timer T305, if running;

1> stop timer T320, if running;

1> enter RRC_CONNECTED state;

1> stop the cell re-selection procedure;

1> set the content of *RRCConnectionSetupComplete* message as follows:

2> set the *selectedPLMN-Identity* to the PLMN selected by upper layers [TS 23.122, TS 24.008] from the PLMN(s) included in the plmn-IdentityList broadcast, within *SystemInformationBlockType1*, in the cell where the RRC connection was established;

2> if upper layers provide the 'Registered MME', set the *registeredMME* as follows:

3> if the PLMN identity of the '*Registered MME'* is different from the PLMN selected by the upper layers, set the IE *plmnIdentity* to the value received from upper layers;

3> set the IEs *mmegi* and *mmec* to the value received from upper layers;

2> set the *nas-DedicatedInformation* to include the information received from upper layers;

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

8.1.1.3.3 Test description

8.1.1.3.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

- The UE is in state Registered, Idle mode (state 2) according to [18].

8.1.1.3.3.2 Test procedure sequence

Table 8.1.1.3.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits a *Paging* message including only unmatched identities (incorrect S-TMSI).	<--	*Paging*	1	-
2	Check: Does the UE transmit an *RRCConnectionRequest* message within 10s?	-->	*RRCConnectionRequest*	1	F
3	The SS transmits a *Paging* message including two unmatched identities and a matched identity.	<--	*Paging*	2	-
4	Check: Does the UE transmit an *RRCConnectionRequest* message?	-->	*RRCConnectionRequest*	2	P
5	The SS transmits an *RRCConnectionSetup* message.	<--	*RRCConnectionSetup*	-	-
6	The UE transmits an *RRCConnectionSetupComplete* message including SERVICE REQUEST to confirm the successful completion of the connection establishment.	-->	*RRCConnectionSetupComplete*	-	-
6A-6D	Steps 6 to 9 of the generic radio bearer establishment procedure in TS 36.508 subclause 4.5.3.3 are executed to successfully complete the service request procedure.	-	-	-	-
7	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	-

8.1.1.3.3.3 Specific message contents

Table 8.1.1.3.3.3-1: *Paging* (step 1, Table 8.1.1.3.3.2-1)

Derivation Path: 36.508 Table 4.6.1-7			
Information Element	**Value/remark**	**Comment**	**Condition**
Paging ::= SEQUENCE {			
pagingRecordList SEQUENCE (SIZE (1..maxPageRec)) OF SEQUENCE {	3 entries		
ue-Identity[1] CHOICE {			
s-TMSI	Set to the different value from the S-TMSI of the UE		
}			
cn-Domain [1]	ps		
ue-Identity[2] CHOICE {			
s-TMSI	Set to the different value from the S-TMSI of the UE		
}			
cn-Domain [2]	ps		
ue-Identity[3] CHOICE {			
s-TMSI	Set to the different value from the S-TMSI of the UE		
}			
cn-Domain [3]	ps		
}			
}			

Table 8.1.1.3.3.3-2: *Paging* (step 3, Table 8.1.1.3.3.2-1)

Derivation Path: 36.508 Table 4.6.1-7			
Information Element	**Value/remark**	**Comment**	**Condition**
Paging ::= SEQUENCE {			
pagingRecordList SEQUENCE (SIZE (1..maxPageRec)) OF SEQUENCE {	3 entries		
ue-Identity[1] CHOICE {			
s-TMSI	Set to the different value from the S-TMSI of the UE		
}			
cn-Domain [1]	ps		
ue-Identity[2] CHOICE {			
s-TMSI	Set to the different value from the S-TMSI of the UE		
}			
cn-Domain [2]	ps		
ue-Identity[3] CHOICE {			
s-TMSI	Set to the value of the S-TMSI of the UE		
}			
cn-Domain [3]	ps		
}			
}			

Table 8.1.1.3.3.3-3: *RRCConnectionRequest* (step 4, Table 8.1.1.3.3.2-1)

Derivation Path: 36.508 Table 4.6.1-16			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionRequest-r8 SEQUENCE {			
establishmentCause	mt-Access		
}			
}			
}			

8.1.1.4 RRC / Paging for connection in idle mode / Shared network environment

8.1.1.4.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_IDLE state having been registered in the TA of the current cell which has
broadcasted a SystemInformationBlockType1 message including multiple PLMN identities }
ensure that {
  when { UE receives a Paging message including an IE ue-Identity set to the S-TMSI which was
allocated to the UE at the UE registration procedure }
    then { UE establishes an RRC connection }
          }
```

8.1.1.4.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.2.3, 5.3.3.2, 5.3.3.3 and 5.3.3.4.

[TS 36.331, clause 5.3.2.3]

Upon receiving the *Paging* message, the UE shall:

1> if in RRC_IDLE, for each of the *PagingRecord*, if any, included in the *Paging* message:

2> if the *ue-Identity* included in the *PagingRecord* matches one of the UE identities allocated by upper layers:

3> forward the *ue-Identity* and *the cn-Domain* to the upper layers.

...

[TS 36.331, clause 5.3.3.2]

The UE initiates the procedure when upper layers request establishment of an RRC connection while the UE is in RRC_IDLE.

Upon initiation of the procedure, the UE shall:

...

1> if access to the cell, as specified above, is not barred:

2> apply the default physical channel configuration as specified in 9.2.4;

2> apply the default semi-persistent scheduling configuration as specified in 9.2.3;

2> apply the default MAC main configuration as specified in 9.2.2;

2> apply the CCCH configuration as specified in 9.1.1.2;

2> apply the timeAlignmentTimerCommon included in SystemInformationBlockType2;

2> start timer T300

2> initiate transmission of the *RRCConnectionRequest* message in accordance with 5.3.3.3;

NOTE 2: Upon initiating the connection establishment procedure, the UE is not required to ensure it maintains up to date system information applicable only for UEs in RRC_IDLE state. However, the UE needs to perform system information acquisition upon cell re-selection.

...

[TS 36.331, clause 5.3.3.3]

The UE shall set the contents of *RRCConnectionRequest* message as follows:

1> set the *ue-Identity* as follows:

2> if upper layers provide an S-TMSI:

3> set the *ue-Identity* to the value received from upper layers;

2> else

3> draw a random value in the range 0 .. 2^{40}-1 and set the *ue-Identity* to this value;

NOTE 1 Upper layers provide the S-TMSI if the UE is registered in the TA of the current cell.

1> set the *establishmentCause* in accordance with the information received from upper layers;

The UE shall submit the *RRCConnectionRequest* message to lower layers for transmission.

The UE shall continue cell re-selection related measurements as well as cell re-selection evaluation. If the conditions for cell re-selection are fulfilled, the UE shall perform cell re-selection as specified in 5.3.3.5.

[TS 36.331, clause 5.3.3.4]

NOTE: Prior to this, lower layer signalling is used to allocate a C-RNTI. For further details see TS 36.321 [6];

The UE shall:

1> perform the radio resource configuration procedure in accordance with the received *radioResourceConfigDedicated* and as specified in 5.3.10;

1> if stored, discard the cell reselection priority information provided by the *idleModeMobilityControlInfo* or inherited from another RAT;

1> stop timer T300;

1> stop timer T302, if running;

1> stop timer T303, if running;

1> stop timer T305, if running;

1> perform the actions as specified in 5.3.3.7;

1> stop timer T320, if running;

1> enter RRC_CONNECTED;

1> stop the cell re-selection procedure;

1> set the content of *RRCConnectionSetupComplete* message as follows:

2> set the *selectedPLMN-Identity* to the PLMN selected by upper layers (see TS 23.122 [11], TS 24.301 [35]) from the PLMN(s) included in the *plmn-IdentityList* in *SystemInformationBlockType1*;

2> if upper layers provide the 'Registered MME', include and set the *registeredMME* as follows:

3> if the PLMN identity of the 'Registered MME' is different from the PLMN selected by the upper layers;

4> include the *plmnIdentity* in the *registeredMME* and set it to the value of the PLMN identity in the 'Registered MME' received from upper layers;

3> set the *mmegi* and the *mmec* to the value received from upper layers;

2> set the *dedicatedInfoNAS* to include the information received from upper layers;

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

8.1.1.4.3 Test description

8.1.1.4.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

- The UE is in state Registered, Idle mode (state 2) according to [18].

8.1.1.4.3.2 Test procedure sequence

Table 8.1.1.4.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits a *Paging* message including a matched identity.	<--	*Paging*	-	-
2	Check: Does the UE transmit an *RRCConnectionRequest* message?	-->	*RRCConnectionRequest*	1	P
3	The SS transmit an *RRCConnectionSetup* message.	<--	*RRCConnectionSetup*	-	-
4	Check: Does the UE transmit an *RRCConnectionSetupComplete* message including SERVICE REQUEST and an IE *selectedPLMN-Identity* corresponding to the PLMN on which the UE has been registered to confirm the successful completion of the connection establishment?	-->	*RRCConnectionSetupComplete*	1	P
4A-4D	Steps 6 to 9 of the generic radio bearer establishment procedure (TS 36.508 4.5.3.3-1) are executed to successfully complete the service request procedure.	-	-	-	-
5	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	-

8.1.1.4.3.3 Specific message contents

Table 8.1.1.4.3.3-1: *SystemInformationBlockType1* (all steps, Table 8.1.1.4.3.2-1)

Derivation Path: 36.508 Table 4.4.3.2-3			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType1 ::= SEQUENCE {			
cellAccessRelatedInformation SEQUENCE {			
plmn-IdentityList SEQUENCE (SIZE (1..6)) OF SEQUENCE {	2 entries		
plmn-Identity[1] SEQUENCE {			
mcc	See Table 8.1.1.4.3.3-1A		
mnc	See Table 8.1.1.4.3.3-1A		
}			
cellReservedForOperatorUse[1]	notReserved		
plmn-Identity[2] SEQUENCE {			
mcc	See Table 8.1.1.4.3.3-1A		
mnc	See Table 8.1.1.4.3.3-1A		
}			
cellReservedForOperatorUse[2]	notReserved		
}			
}			
}			

The PLMN Identity list broadcasted on the BCCH in Cell 1 shall be configured as defined in the table below.

Table 8.1.1.4.3.3-1A: PLMN Identity List broadcasted for Cell 1

Cell	PLMN Identity (1)		PLMN Identity (2)	
	MCC digits	MNC digits	MCC digits	MNC digits
1	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	(NOTE 2)			(NOTE 2)		
2	(NOTE 3)			0	2	-

NOTE 1: "–" (dash) denotes "not present"

NOTE 2: Set to the same Mobile Country Code and Mobile Network Code stored in EF_{IMSI} on the test USIM card for PLMN 1.

NOTE 3: Set to the same Mobile Country Code stored in EF_{IMSI} on the test USIM card for PLMN 2.

Table 8.1.1.4.3.3-2: *RRCConnectionRequest* (step 2, Table 8.1.1.4.3.2-1)

Derivation Path: 36.508 Table 4.6.1-15			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionRequest-r8 SEQUENCE {			
establishmentCause	mt-Access		
}			
}			
}			

Table 8.1.1.4.3.3-3: *RRCConnectionSetupComplete* (step 4, Table 8.1.1.4.3.2-1)

Derivation Path: 36.508, Table 4.6.1-17			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionSetupComplete ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionSetupComplete-r8 SEQUENCE {			
selectedPLMN-Identity	Set to the PLMN selected by upper layers		
}			
}			
}			
}			

8.1.1.5 Void

8.1.1.6 RRC / BCCH modification in connected mode

8.1.1.6.1 Test Purpose (TP)

```
with { the UE is in E-UTRA RRC_CONNECTED }
ensure that {
  when { the UE receives a Paging message including the systemInfoModification }
    then { the UE re-acquires the MasterInformationBlock, SystemInformationBlockType1 and
SystemInformationBlockType2 }
```

8.1.1.6.2 Conformance requirements

References: The conformance requirements covered in the present test case are specified in: TS 36.331 clauses 5.3.2.3, 5.2.2.3 and 5.2.2.4.

[TS 36.331, clause 5.3.2.3]

Upon receiving the *Paging* message, the UE shall:

...

1> if the *systemInfoModification* is included:

2> re-acquire the required system information using the system information acquisition procedure as specified in 5.2.2.

...

[TS 36.331, clause 5.2.2.3]

The UE shall:

1> ensure having a valid version, as defined below, of (at least) the following system information, also referred to as the 'required' system information:

...

2> if in RRC_CONNECTED:

3> the *MasterInformationBlock*, *SystemInformationBlockType1* and *SystemInformationBlockType2* as well as *SystemInformationBlockType8*, depending on support of CDMA2000;

...

[TS 36.331, clause 5.2.2.4]

The UE shall:

1> apply the specified BCCH configuration defined in 9.1.1.1;

1> if the procedure is triggered by a system information change notification:

2> start acquiring the required system information, as defined in 5.2.2.3, from the beginning of the modification period following the one in which the change notification was received;

NOTE 1: The UE continues using the previously received system information until the new system information has been acquired.

...

The UE may apply the received SIBs immediately, i.e. the UE does not need to delay using a SIB until all SI messages have been received. The UE may delay applying the received SIBs until completing lower layer procedures associated with a received or a UE originated RRC message, e.g. an ongoing random access procedure.

NOTE 2: While attempting to acquire a particular SIB, if the UE detects from *schedulingInfoList* that it is no longer present, the UE should stop trying to acquire the particular SIB.

8.1.1.6.3 Test description

8.1.1.6.3.1 Pre-test conditions

System Simulator:

- Cell 1.

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) according to [18], and using the condition no_periodic_BSR_or_PHR.

8.1.1.6.3.2 Test procedure sequence

Table 8.1.1.6.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits a *Paging* message paging occasion including a *systemInfoModification.*	<--	*Paging*	-	-
2	From the beginning of the next modification period the SS transmits a modified *SystemInformationBlockType1* and *SystemInformationBlockType2* as specified.	-	-	-	-
3	During the first on duration period after the end of the modification period where *SystemInformationBlockType2* was modified (see step 2), the SS transmits a PDCCH order including a dedicated preamble.	-	-	-	-
4	Check: Does the UE initiate a random access procedure using *prach-ConfigIndex* given in step 2 (i.e. for FDD n subframe number 7 and for TDD in subframe number 6)?	-	-	1	P
5	The SS transmits Random Access Response with RAPID corresponding to preamble in steps 3 and 4.	-	-	-	-

8.1.1.6.3.3 Specific message contents

Table 8.1.1.6.3.3-1: *RRCConnectionReconfiguration* (preamble, step 8, TS 36.508 table 4.5.3.3-1)

Derivation path: 36.508 table 4.6.1-8			
Information Element	**Value/Remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
rrcConnectionReconfiguration-r8 {			
radioResourceConfigDedicated {			
mac-MainConfig {			
explicitValue {			
drx-Config	Not present		
}			
}			
}			
}			
}			
}			
}			

Table 8.1.1.6.3.3-2: *SystemInformationBlockType1* (step 2, table 8.1.1.6.3.2-1)

Derivation path: 36.508 Table 4.4.3.2-3			
Information Element	**Value/Remark**	**Comment**	**Condition**
SystemInformationBlockType1 ::= SEQUENCE {			
systemInfoValueTag	1	Default value is 0	
}			

Table 8.1.1.6.3.3-3: *SystemInformationBlockType2* (step 2, table 8.1.1.6.3.2-1)

Derivation path: 36.508 Table 4.4.3.3-1			
Information Element	**Value/Remark**	**Comment**	**Condition**
SystemInformationBlockType2 ::= SEQUENCE {			
radioResourceConfigCommon SEQUENCE {			
prach-Config SEQUENCE {			
prach-ConfigInfo SEQUENCE {			
prach-ConfigIndex	5	The default is 3	FDD
prach-ConfigIndex	52	The default is 51	TDD
}			
}			
}			
}			

8.1.2 RRC connection establishment

8.1.2.1 RRC connection establishment / Ks=1.25/ Success

8.1.2.1.1 Test Purpose (TP)

(1)

```
with {UE in E-UTRA RRC_IDLE state}
ensure that {
  when { UE is requested to make an outgoing call }
   then { UE establishes an RRC Connection }
        }
```

8.1.2.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: 3GPP TS 36.331 clauses 5.3.3.2, 5.3.3.3 and 5.3.3.4.

[TS 36.331, clause 5.3.3.2]

The UE initiates the procedure when upper layers request establishment of a signalling connection while the UE is in RRC_IDLE state.

Upon initiation of the procedure, the UE shall:

...

1> If access to the cell, as specified above, is not barred:

2> apply the default physical channel configuration as specified in 9.2.4;

2> apply the default semi-persistent scheduling configuration as specified in 9.2.3;

2> apply the default MAC main configuration as specified in 9.2.2;

2> apply the CCCH configuration as specified in 9.1.1.2;

2> apply the *timeAlignmentTimerCommon* included in *SystemInformationBlockType2*;

2> start timer T300;

2> initiate transmission of the *RRCConnectionRequest* message in accordance with 5.3.3.3;

NOTE 2 Upon initiating the connection establishment procedure, the UE is not required to ensure it maintains up to date system information applicable only for UEs in RRC_IDLE state. However, the UE needs to perform system information acquisition upon re-selection.

...

[TS 36.331, clause 5.3.3.3]

The UE shall set the contents of *RRCConnectionRequest* message as follows:

1> set the IE *ue-Identity* as follows:

2> if upper layers provide an S-TMSI:

3> set the *ue-Identity* to the value received from upper layers;

2> else

3> draw a random value in the range 0 .. 2^{40}-1 and set the *ue-Identity* to this value;

NOTE 1 Upper layers provide the S-TMSI if the UE is registered in the TA of the current cell.

1> Set the *establishmentCause* in accordance with the information received from upper layers;

The UE shall submit the *RRCConnectionRequest* message to lower layers for transmission.

...

[TS 36.331, clause 5.3.3.4]

...

The UE shall:

1> perform the radio resource configuration procedure in accordance with the received *radioResourceConfiguration* and as specified in 5.3.10;

1> if stored, discard the cell reselection priority information provided by the *idleModeMobilityControlInfo* or inherited from another RAT;

1> stop timer T300;

1> stop timer T302, if running;

1> stop timer T303, if running;

1> stop timer T305, if running;

1> perform the actions as specified in 5.3.3.7;

1> stop timer T320, if running;

1> enter RRC_CONNECTED;

1> stop the cell re-selection procedure;

1> set the contents of *RRCConnectionSetupComplete* message as follows:

2> set the *selectedPLMN-Identity* to the PLMN selected by upper layers (see TS 23.122 [11], TS 24.301 [35]) from the PLMNs included in the *plmn-IdentityList* in *SystemInformationBlockType1*;

2> if upper layers provide the 'Registered MME', include and set the *registeredMME* as follows:

3> if the PLMN identity of the '*Registered MME'* is different from the PLMN selected by the upper layers:

4> include the *plmnIdentity* in the *registeredMME* and set it to the value of the PLMN identity in the 'Registered MME' received from upper layers;

3> set the *mmegi* and *mmec* to the value received from upper layers;

2> set the *nas-DedicatedInformation* to include the information received from upper layers;

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

8.1.2.1.3 Test description

8.1.2.1.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

- The UE is in state Registered, Idle mode (state 2) according to [18].

8.1.2.1.3 Test procedure sequence

Table 8.1.2.1.3-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS sends a *Paging* message to the UE on the appropriate paging block, and including the UE identity in one entry of the IE *pagingRecordLists*.	<--	*Paging*	-	-
2	Check: does the UE transmit an *RRCConnectionRequest* message?	-->	*RRCConnectionRequest*	1	P
3	The SS transmit an *RRCConnectionSetup* message with SRB1 configuration (Note 1).	<--	*RRCConnectionSetup*	-	-
4	Check: Does the UE transmit an *RRCConnectionSetupComplete* including SERVICE REQUEST message to confirm the successful completion of the connection establishment?	-->	*RRCConnectionSetupComplete*	1	P
4A-4D	Steps 6 to 9 of the generic radio bearer establishment procedure (TS 36.508 4.5.3.3-1) are executed to successfully complete the service request procedure.	-	-	-	-
5	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	-
Note 1: Contains a SERVICE REQUEST NAS message.					

8.1.2.1.3.3 Specific message contents

Table 8.1.2.1.3.3-1: RRCConnectionSetup-DeltaMCS (step 3, Table 8.1.2.1.3-1)

Derivation Path: 36.508, Table 4.6.1-17			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionSetup-DeltaMCS ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
rrcConnectionSetup-r8 SEQUENCE {			
radioResourceConfigDedicated	RadioResourceConfigDedicated-SRB1-DeltaMCS		
}			
}			
}			
}			

Table 8.1.2.1.3.3-2: RadioResourceConfigDedicated-SRB1-DeltaMCS (Table 8.1.2.1.3.3-1)

Derivation Path: 36.508, Table 4.6.3-15,			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated-SRB1-DeltaMCS ::= SEQUENCE {			
physicalConfigDedicated	PhysicalConfigDedicated--DeltaMCS using condition SRB1		
}			

Table 8.1.2.1.3.3-3: PhysicalConfigDedicated—DeltaMCS (Table 8.1.2.1.3.3-2)

Derivation Path: 36.508, Table 4.8.2.1.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
PhysicalConfigDedicated--DeltaMCS ::= SEQUENCE {			
uplinkPowerControlDedicated	UplinkPowerControlDedicated--DeltaMCS		SRB1
}			

Table 8.1.2.1.3.3-4: UplinkPowerControlDedicated--DeltaMCS (Table 8.1.2.1.3.3-3)

Derivation Path: 36.508, Table 4.6.3-26			
Information Element	**Value/remark**	**Comment**	**Condition**
UplinkPowerControlDedicated--DeltaMCS ::= SEQUENCE {			
deltaMCS-Enabled	en1	Corresponds to Ks value 1.25 corresponding to “enabled”.	
}			

8.1.2.2 RRC connection establishment / Reject with wait time

8.1.2.2.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_IDLE state and has sent an RRCConnectionRequest message }
ensure that {
  when { UE receives an RRCConnectionReject message including an IE waitTime set to non-zero value }
   then { UE doesn't re-send RRCConnectionRequest before the waitTime is expired}
            }
```

8.1.2.2.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.3.2, 5.3.3.3 and 5.3.3.8.

[TS 36.331, clause 5.3.3.2]

…

Upon initiation of the procedure, the UE shall:

1> if the UE is establishing the RRC connection for mobile terminating calls:

2> if timer T302 is running:

3> consider access to the cell as barred;

2> else:

3> consider access to the cell as not barred;

1> else if the UE is establishing the RRC connection for emergency calls:

...

1> else if the UE is establishing the RRC connection for mobile originating calls:

2> if timer T302 or T303 is running:

3> consider access to the cell as barred;

...

1> If access to the cell, as specified above, is not barred:

2> apply the default physical channel configuration as specified in 9.2.4;

2> apply the default semi-persistent scheduling configuration as specified in 9.2.3;

2> apply the default MAC main configuration as specified in 9.2.2;

2> apply the CCCH configuration as specified in 9.1.1.2;

2> apply the *timeAlignmentTimerCommon* included in *SystemInformationBlockType2*;

2> start timer T300;

2> initiate transmission of the *RRCConnectionRequest* message in accordance with 5.3.3.3;

NOTE 2: Upon initiating the connection establishment procedure, the UE is not required to ensure it maintains up to date system information applicable only for UEs in RRC_IDLE state. However, the UE needs to perform system information acquisition upon re-selection.

...

[TS 36.331, clause 5.3.3.3]

The UE shall set the contents of *RRCConnectionRequest* message as follows:

1> set the IE *ue-Identity* as follows:

2> if upper layers provide an S-TMSI:

3> set the *ue-Identity* to the value received from upper layers;

2> else

3> draw a random value in the range 0 .. 2^{40}-1 and set the *ue-Identity* to this value;

NOTE 1 Upper layers provide the S-TMSI if the UE is registered in the TA of the current cell.

1> Set the *establishmentCause* in accordance with the information received from upper layers;

The UE shall submit the RRCConnectionRequest message to lower layers for transmission.

...

[TS 36.331, clause 5.3.3.8]

The UE shall:

1> stop timer T300;

1> reset MAC and release the MAC configuration;

1> start timer T302, with the timer value set to the *waitTime*;

1> inform upper layers about the failure to establish the RRC connection and that access barring for mobile originating calls, mobile originating signalling and mobile terminating access is applicable, upon which the procedure ends.

8.1.2.2.3 Test description

8.1.2.2.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

- The UE is in state Loopback Activated (state 4) with condition UE TEST LOOP MODE B on Cell 1 (serving cell) according to [18].

8.1.2.2.3.2 Test procedure sequence

Table 8.1.2.2.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits one IP packet to the UE on the DRB associated with the default EPS bearer context on Cell 1.	-	-	-	-
1A	Wait for 1 s after the IP packet has been transmitted in step 1. (Note 3)				
1B	The SS transmits an *RRCConnectionRelease* message on Cell 1.	<--	*RRCConnectionRelease*		
1C	The SS transmits a *Paging* message with a matching UE identity.	<--	*Paging*		
2	The UE transmits an *RRCConnectionRequest* message.	-->	*RRCConnectionRequest*	-	-
3	The SS responds with *RRCConnectionReject* message with IE *waitTime* set to 10s.	<--	*RRCConnectionReject*	-	-
-	EXCEPTION: the behaviour in table 8.1.2.2.3.2-2 runs in parallel with steps 4 and 5 below.	-	-	-	-
4	Void	-	-	-	-
5	The SS transmits a *Paging* message with a matching UE identity.	<--	*Paging*	-	-
6	The SS starts timer Timer_1 = 5 s (Note 1)	-	-	-	-
-	EXCEPTION: Steps 7a1 to 7 b2 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.(Note 2)	-	-	-	-
7a1	Check: Does UE transmit *RRCConnectionRequest message* when Cell 1 is treated as normal cell and access is granted for originating call?	-	*RRCConnectionRequest*	1	P
7a2 - 7a6	Steps 4 to 8 of the generic radio bearer establishment procedure (TS 36.508 4.5.3.3-1) are executed.	-	-	-	-
	EXCEPTION: Step 7a7 and 7a8 can occur in any order				
7a7	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*		
7a8	The UE loop backs the IP packet received in step 1 on the DRB associated with the default EPS bearer context on Cell 1.				
7a9	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	
7b1	The SS waits for Timer_1 expiry	-	-	-	-
7b2	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.2 indicate that the UE is in E-UTRA RRC_IDLE state on Cell 1?	-	-	1	-

Note 1: Test step 6 is always executed 10s after step 3, i.e. when the reject timer is expired in the UE and the UE is allowed to answer paging and initiate calls again. This is because test steps 4 and 5 of the main behaviour run in parallel with test step 1 of the parallel behaviour, which lasts 10s unless the verdict is "Failed".

Note 2: A UE may send *RRCConnectionRequest* for the pending data sent at step 1.

Note 3: The 1 second delay is used to secure that the UE have received and forwarded the IP Packet transmitted by the SS in step 1 to the UE test loop function before the *RRCConnectionRelease* message is sent by the SS in step 1B.

Table 8.1.2.2.3.2-2: Parallel behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Check: Does the UE transmit an *RRCConnectionRequest* message within 10s.	-->	*RRCConnectionRequest*	1	F

8.1.2.2.3.3 Specific message contents

Table 8.1.2.2.3.3-1: *RRCConnectionReject* (step 3, table 8.1.2.2.3.2-1)

Derivation path: 36.508 table 4.6.1-14			
Information Element	**Value/Remark**	**Comment**	**Condition**
RRCConnectionReject ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
rrcConnectionReject-r8 SEQUENCE {			
waitTime	10	10 seconds	
}			
}			
}			
}			

Table 8.1.2.2.3.3-2: CLOSE UE TEST LOOP (preamble, Table 8.1.2.2.3.2-1)

Derivation Path: 36.508, Table 4.7A-3, condition UE TEST LOOP MODE B			
Information Element	**Value/remark**	**Comment**	**Condition**
UE test loop mode B LB setup			
IP PDU delay	'0000 0101'B	5 seconds	

8.1.2.3 RRC connection establishment / Return to idle state after T300 timeout

8.1.2.3.1 Test Purpose (TP)

(1)

```
with {UE in E-UTRA RRC_IDLE state having sent an RRCConnectionRequest message}
ensure that {
  when { the SS does not answer to the UE during T300}
   then {UE goes to RRC_IDLE}
        }
```

8.1.2.3.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: 3GPP TS 36.331 clause 5.3.3.6.

[TS 36.331, clause 5.3.3.6]

The UE shall:

1> if timer T300 expires

2> reset MAC, release the MAC configuration and re-establish RLC for all RBs that are established;

2> inform upper layers about the failure to establish the RRC connection, upon which the procedure ends.

8.1.2.3.3 Test description

8.1.2.3.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

- The UE is in state Registered, Idle mode (state 2) according to [18].

8.1.2.3.3.2 Test procedure sequence

Table 8.1.2.3.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
0A	SS is configured not to transmit MAC control element with matched UE Contention Resolution Identity	-	-	-	-
1	SS sends a Paging message to the UE on the appropriate paging block, and including the UE identity in one entry of the IE pagingRecordLists.	<--	*Paging*	-	-
2	The UE transmits an *RRCConnectionRequest* message.	-->	*RRCConnectionRequest*	-	-
3	The SS waits for 2s. Note: the UE may transmit one or more *RRCConnectionRequest* messages but the SS does not answer to these messages.	-->	*RRCConnectionRequest*	-	-
3A	SS is configured to transmit MAC control element with matched UE Contention Resolution Identity	-	-	-	-
4	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.2 indicate that the UE is in E-UTRA RRC_IDLE state on Cell 1?	-	-	1	-

8.1.2.3.3.3 Specific message contents

Table 8.1.2.3.3.3-1: *RRCConnectionRequest* (step 2 and step 3, Table 8.1.2.3.3.2-1)

Derivation Path: 36.508, Table 4.6.1-16			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionRequest-r8 SEQUENCE {			
establishmentCause	mt-Access		
}			
}			
}			

8.1.2.4 Void

8.1.2.5 RRC connection establishment / 0% access probability for MO calls, no restriction for MO signalling

8.1.2.5.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_IDLE state having received a SystemInformationBlockType2 indicating 0%
access probability for MO calls }
ensure that {
  when { UE has user data pending }
    then { UE does not transmit any RRCConnectionRequest message }
           }
```

(2)

```
with { UE in E-UTRA RRC_IDLE state }
ensure that {
  when { UE reselects a new cell which belongs to different TA and broadcasts a
SystemInformationBlockType2 indicating no restriction for MO signalling }
    then { UE transmits an RRCConnectionRequest message }
           }
```

8.1.2.5.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.3.2.

[TS 36.331, clause 5.3.3.2]

The UE initiates the procedure when upper layers request establishment of an RRC connection while the UE is in RRC_IDLE.

Upon initiation of the procedure, the UE shall:

1> if the UE is establishing the RRC connection for mobile terminating calls:

...

1> else if the UE is establishing the RRC connection for emergency calls:

...

1> else if the UE is establishing the RRC connection for mobile originating calls:

2> if timer T302 or T303 is running:

3> consider access to the cell as barred;

2> else if *SystemInformationBlockType2* includes the *ac-BarringInfo* and the *ac-BarringForMO-Data* is present:

3> if the UE has one or more Access Classes, as stored on the USIM, with a value in the range 11..15, which is valid for the UE to use according to TS 22.011 [10] and TS 23.122 [11], and

3> for at least one of these Access Classes the corresponding bit in the *ac-BarringForSpecialAC* contained in *ac-BarringForMO-Data* is set to *zero*:

4> consider access to the cell as not barred;

3> else:

4> draw a random number *'rand'* uniformly distributed in the range: $0 \leq rand < 1$;

4> if 'rand' is lower than the value indicated by *ac-BarringFactor* included in *ac-BarringForMO-Data*:

5> consider access to the cell as not barred;

4> else:

5> consider access to the cell as barred;

2> else:

3> consider access to the cell as not barred;

1> else (the UE is establishing the RRC connection for mobile originating signalling):

2> if timer T302 or T305 is running:

3> consider access to the cell as barred;

2> else if *SystemInformationBlockType2* includes the *ac-BarringInfo* and the *ac-BarringForMO-Signalling* is present:

3> if the UE has one or more Access Classes, as stored on the USIM, with a value in the range 11..15, which is valid for the UE to use according to TS 22.011 [10] and TS 23.122 [11], and

3> for at least one of these Access Classes the corresponding bit in the *ac-BarringForSpecialAC* contained in *ac-BarringForMO-Signalling* is set to *zero*:

4> consider access to the cell as not barred;

3> else:

4> draw a random number 'rand' uniformly distributed in the range: $0 \leq \text{rand} < 1$;

4> if 'rand' is lower than the value indicated by *ac-BarringFactor* included in *ac-BarringForMO-Signalling*:

5> consider access to the cell as not barred;

4> else:

5> consider access to the cell as barred;

2> else:

3> consider access to the cell as not barred;

1> if access to the cell, as specified above, is not barred:

2> apply the default physical channel configuration as specified in 9.2.4;

2> apply the default semi-persistent scheduling configuration as specified in 9.2.3;

2> apply the default MAC main configuration as specified in 9.2.2;

2> apply the CCCH configuration as specified in 9.1.1.2;

2> apply the *timeAlignmentTimerCommon* included in *SystemInformationBlockType2*;

2> start timer T300;

2> initiate transmission of the *RRCConnectionRequest* message in accordance with 5.3.3.3;

NOTE 2: Upon initiating the connection establishment procedure, the UE is not required to ensure it maintains up to date system information applicable only for UEs in RRC_IDLE state. However, the UE needs to perform system information acquisition upon cell re-selection.

1> else:

2> if the UE is establishing the RRC connection for mobile originating calls and if both timers T302 and T303 are not running:

3> draw a random number '*rand*' that is uniformly distributed in the range $0 \leq \textit{rand} < 1$;

3> start timer T303 with the timer value calculated as follows, using the *ac-BarringTime* included in *ac-BarringForMO-Data*:

$T303 = (0.7 + 0.6 * \textit{rand}) * \textit{ac-BarringTime}$

3> inform upper layers about the failure to establish the RRC connection and that access barring for mobile originating calls is applicable, upon which the procedure ends;

...

8.1.2.5.3 Test description

8.1.2.5.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 11 (HPLMN in different TA).

UE:

None.

Preamble:

- The UE is in state Loopback Activated (state 4) with condition UE TEST LOOP MODE B on Cell 1 (serving cell) according to [18].

8.1.2.5.3.2 Test procedure sequence

Table 8.1.2.5.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. The configuration marked "T1" is applied at the point indicated in the Main behaviour description in Table 8.1.2.5.3.2-2.

Table 8.1.2.5.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 11	Remark
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	-79	The power level values are assigned to satisfy RCell 1 < RCell 11.

Table 8.1.2.5.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Void	-	-	-	-
2	Void	-	-	-	-
2A	The SS transmits an *RRCConnectionRelease* message on Cell 1.	<--	*RRCConnectionRelease*	-	-
2B	Wait for 5 s for the UE to enter E-UTRA RRC_IDLE state.	-	-	-	-
3	The SS changes Cell 1 and Cell 11 level according to the row "T1" in table 8.1.2.5.3.2-1.	-	-	-	-
3A	Check: Does the UE transmit an *RRCConnectionRequest* on Cell 11?	-->	*RRCConnectionRequest*	2	P
3B-3F	Steps 2 to 6 of the generic test procedure in TS 36.508 [18] subclause 6.4.2.7 are performed on Cell 11. Note: The UE performs a TAU procedure and the RRC connection is released.	-	-	-	-
4-9	Void	-	-	-	-
10	Wait for 5 s for the UE to enter E-UTRA RRC_IDLE state.	-	-	-	-
10A	Generic test procedure in TS 36.508 subclause 4.5.3.3 is performed on Cell 11. NOTE: The UE performs the establishment of the new data radio bearer associated with the default EPS bearer context.	-	-	-	-
10B	The SS transmits one IP packet to the UE on the DRB associated with the default EPS bearer context on Cell 11.	-	-	-	-
10C	Wait for 1 s after the IP packet has been transmitted in step 10B. (Note 1)	-	-	-	-
11-13	Void	-	-	-	-
14	The SS transmits an *RRCConnectionRelease* message on Cell 11.	<--	*RRCConnectionRelease*	-	-
15	Check: Does the UE transmit an *RRCConnectionRequest* message on Cell 11 within 30s?	-->	*RRCConnectionRequest*	1	F
16	Void	-	-	-	-
-	EXCEPTION: Step 26 and Step 27a1 can happen in any order	-	-	-	-
17 - 26	Check: Does the test result of steps 1 to 10 generic test procedure in TS 36.508 subclause 6.4.2.2 indicate that the UE is in E-UTRA RRC_IDLE state on Cell 11?	-	-	1,2	-
-	EXCEPTION: Step 27a1 describes behaviour that depends on UE implementation; the "lower case letter" identifies a step sequence that takes place if the UE has user data pending.	-	-	-	-
27a1	IF the UE has user data pending THEN the UE loop backs the IP packet received in step 10C on the DRB associated with the default EPS bearer context on Cell 11 within 10s.	-	-	-	-

Note 1: The 1 second delay is used to secure that the UE have received and forwarded the IP Packet transmitted by the SS in step 10B to the UE test loop function before the *RRCConnectionRelease* message is sent by the SS in step 14.

8.1.2.5.3.3 Specific message contents

Table 8.1.2.5.3.3-1: *SystemInformationBlockType2* for Cell 11 (preamble and all steps, Table 8.1.2.5.3.2-2)

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling	Not present		
ac-BarringForMO-Data SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'11111'B		
}			
}			
}			

Table 8.1.2.5.3.3-1A: CLOSE UE TEST LOOP (preamble, Table 8.1.2.5.3.2-2)

Derivation Path: 36.508, Table 4.7A-3, condition UE TEST LOOP MODE B			
Information Element	**Value/remark**	**Comment**	**Condition**
UE test loop mode B LB setup			
IP PDU delay	'0000 0101'B	5 seconds	

Table 8.1.2.5.3.3-2: *RRCConnectionRequest* (step 3A, Table 8.1.2.5.3.2-2)

Derivation Path: 36.508, Table 4.6.1-16			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionRequest-r8 SEQUENCE {			
establishmentCause	mo-Signalling		
}			
}			
}			

8.1.2.6 RRC connection establishment / Non-zero percent access probability for MO calls, no restriction for MO signalling

8.1.2.6.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_IDLE state having received a SystemInformationBlockType2 indicating non zero
percent access probability for MO calls }
ensure that {
  when { UE has user data pending }
    then { UE does not transmit any RRCConnectionRequest message or UE transmits an
RRCConnectionRequest message }
          }
```

(2)

```
with { UE in E-UTRA RRC_IDLE state }
ensure that {
  when { UE reselects a new cell which belongs to different TA and broadcasts a
SystemInformationBlockType2 indicating no restriction for MO signalling }
    then { UE transmits an RRCConnectionRequest message }
          }
```

8.1.2.6.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.3.2.

[TS 36.331, clause 5.3.3.2]

The UE initiates the procedure when upper layers request establishment of an RRC connection while the UE is in RRC_IDLE.

Upon initiation of the procedure, the UE shall:

1> if the UE is establishing the RRC connection for mobile terminating calls:

...

1> else if the UE is establishing the RRC connection for emergency calls:

...

1> else if the UE is establishing the RRC connection for mobile originating calls:

2> if timer T302 or T303 is running:

3> consider access to the cell as barred;

2> else if *SystemInformationBlockType2* includes the *ac-BarringInfo* and the *ac-BarringForMO-Data* is present:

3> if the UE has one or more Access Classes, as stored on the USIM, with a value in the range 11..15, which is valid for the UE to use according to TS 22.011 [10] and TS 23.122 [11], and

3> for at least one of these Access Classes the corresponding bit in the *ac-BarringForSpecialAC* contained in *ac-BarringForMO-Data* is set to *zero*:

4> consider access to the cell as not barred;

3> else:

4> draw a random number '*rand*' uniformly distributed in the range: $0 \leq rand < 1$;

4> if '*rand*' is lower than the value indicated by *ac-BarringFactor* included in *ac-BarringForMO-Data*:

5> consider access to the cell as not barred;

4> else:

5> consider access to the cell as barred;

2> else:

3> consider access to the cell as not barred;

1> else (the UE is establishing the RRC connection for mobile originating signalling):

2> if timer T302 or T305 is running:

3> consider access to the cell as barred;

2> else if *SystemInformationBlockType2* includes the *ac-BarringInfo* and the *ac-BarringForMO-Signalling* is present:

...

2> else:

3> consider access to the cell as not barred;

1> if access to the cell, as specified above, is not barred:

2> apply the default physical channel configuration as specified in 9.2.4;

2> apply the default semi-persistent scheduling configuration as specified in 9.2.3;

2> apply the default MAC main configuration as specified in 9.2.2;

2> apply the CCCH configuration as specified in 9.1.1.2;

2> apply the *timeAlignmentTimerCommon* included in *SystemInformationBlockType2*;

2> start timer T300;

2> initiate transmission of the *RRCConnectionRequest* message in accordance with 5.3.3.3;

NOTE 2: Upon initiating the connection establishment procedure, the UE is not required to ensure it maintains up to date system information applicable only for UEs in RRC_IDLE state. However, the UE needs to perform system information acquisition upon cell re-selection.

1> else:

2> if the UE is establishing the RRC connection for mobile originating calls and if both timers T302 and T303 are not running:

3> draw a random number '*rand*' that is uniformly distributed in the range $0 \leq rand < 1$;

3> start timer T303 with the timer value calculated as follows, using the *ac-BarringTime* included in *ac-BarringForMO-Data*:

$T303 = (0.7 + 0.6 * rand) * ac\text{-}BarringTime$

3> inform upper layers about the failure to establish the RRC connection and that access barring for mobile originating calls is applicable, upon which the procedure ends;

2> else if the UE is establishing the RRC connection for mobile originating signalling and if both timers T302 and T305 are not running:

3> draw a random number '*rand*' that is uniformly distributed in the range $0 \leq rand < 1$;

3> start timer T305 with the timer value calculated as follows, using the *ac-BarringTime* included in *ac-BarringForMO-Signalling*:

$T305 = (0.7 + 0.6 * rand) * ac\text{-}BarringTime$

3> inform upper layers about the failure to establish the RRC connection and that access barring for mobile originating signalling is applicable, upon which the procedure ends;

8.1.2.6.3 Test description

8.1.2.6.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 11.

UE:

None.

Preamble:

- UE is in state Generic RB Established, UE Test Mode Activated (state 3A) on Cell 1 according to [18].

8.1.2.6.3.2 Test procedure sequence

Table 8.1.2.6.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 11	Remark
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	-79	The power level values are assigned to satisfy $R_{Cell\ 1} < R_{Cell\ 11}$.

Table 8.1.2.6.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS initializes an internal counter K to 0 and L to 0.	-	-	-	-
2	Void	-	-	-	-
-	EXCEPTION: Step 2Aa1 to 3b9 shall be repeated maximum 50 times unless K > 0 and L >0. (Note 1)	-	-	-	-
-	EXCEPTION: Step 2Aa1 describes behaviour that depends on the internal counters.	-	-	-	-
2Aa1	IF K>0 or L>0 THEN The SS opens the UE test loop mode.	-	-	-	-
2B	The SS closes the UE test loop mode.	-	-	-	-
2C	The SS transmits one IP packet to the UE on the DRB associated with the default EPS bearer context on Cell 1.	-	-	-	-
2D	Wait for 1 s after the IP packet has been transmitted in step 2C.	-	-	-	-
2E	SS transmits an *RRCConnectionRelease* message to release the RRC connection.	<--	*RRCConnectionRelease*	-	-
2F	Wait for 5 s for the UE to enter E-UTRA RRC_IDLE state.	-	-	-	-
-	EXCEPTION: Steps 3a1 to 3b9 describe behaviours which vary depending on whether the UE transmits an *RRCConnectionRequest* message or not.	-	-	-	-
3a1	IF the UE does not transmit any *RRCConnectionRequest* message within 5s (Note 3) THEN the SS increments the counter K by 1.	-	-	-	-
-	EXCEPTION: Steps 3a9 to 3a10 can occur in any order	-	-	-	-
3a2-3a9	Steps 2 to 9 of the generic radio bearer establishment procedure (TS 36.508 4.5.3.3-1) are executed (Note 2).	-	-	-	-
-	EXCEPTION: Step 3a10 describes behaviour that depends on UE implementation; step 3a10 takes place if the UE has user data pending.	-	-	-	-
3a10	IF the UE has user data pending THEN the UE loop backs the IP packet received in step 2D on the DRB associated with the default EPS bearer context on Cell 1 within 10 s.	-	-	-	-
3b1	ELSE IF the UE transmits an *RRCConnectionRequest* message on Cell 1 THEN the SS increments the counter L by 1.	-->	*RRCConnectionRequest*	-	-
3b2	Void	-	-	-	-
-	EXCEPTION: Steps 3b8 to 3b9 can occur in any order	-	-	-	-
3b3-3b8	Steps 4 to 9 of the generic radio bearer establishment procedure (TS 36.508 4.5.3.3-1) are executed.	-	-	-	-
3b9	The UE loop backs the IP packet received in step 4 on the DRB associated with the default EPS bearer context on Cell 1.	-	-	-	-
3b10 - 3b14	Void	-	-	-	-
4	Check: Is the counter K > 0 and L > 0?	-	-	1	P
4A	The SS transmits an *RRCConnectionRelease* message on Cell 1.	<--	*RRCConnectionRelease*	-	-
4B	Wait for 5 s for the UE to enter E-UTRA RRC_IDLE state.	-	-	-	-
5	The SS changes the power level setting according to the row “T1” in table 8.1.2.6.3.2-1.	-	-	-	-
6	Check: Does the UE transmit an	-->	*RRCConnectionRequest*	2	P

	RRCConnectionRequest message on Cell 11?				
7-11	Steps 2 to 6 of the generic test procedure in TS 36.508 subclause 6.4.2.7 are performed on Cell 11. NOTE: The UE performs a TAU procedure and the RRC connection is released.	-	-	-	-
12	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.2 indicate that the UE is in E-UTRA RRC_IDLE state on Cell 11?	-	-	1,2	-

Note 1: There is an extremely low probability that the UE originating calls are barred, or not barred, 50 times consecutively. (The probability is 1.78×10^{-15}). Therefore, 50 times is enough number of trials for this test case.
Note 2: After UE enters RRC_CONNECTED T303 is stopped.
Note 3: The UE starts T303.

8.1.2.6.3.3 Specific message contents

Table 8.1.2.6.3.3-1: *SystemInformationBlockType2* for Cell 1 and Cell 11 (preamble and all steps, Table 8.1.2.6.3.2-2)

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling	Not present		
ac-BarringForMO-Data SEQUENCE {			
ac-BarringFactor	p50		
ac-BarringTime	s64		
ac-BarringForSpecialAC	'00000'B		
}			
}			
}			

Table 8.1.2.6.3.3-2: *RRCConnectionRequest* (step 3b1, Table 8.1.2.6.3.2-2)

Derivation Path: 36.508, Table 4.6.1-16			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionRequest-r8 SEQUENCE {			
establishmentCause	mo-Data		
}			
}			
}			

Table 8.1.2.6.3.3-3: Void

Table 8.1.2.6.3.3-4: *RRCConnectionRequest* (step 6, Table 8.1.2.6.3.2-2)

Derivation Path: 36.508, Table 4.6.1-16			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionRequest-r8 SEQUENCE {			
establishmentCause	mo-Signalling		
}			
}			
}			

Table 8.1.2.6.3.3-5: CLOSE UE TEST LOOP (step 2B, Table 8.1.2.6.3.2-2)

Derivation Path: 36.508, Table 4.7A-3, condition UE TEST LOOP MODE B			
Information Element	**Value/remark**	**Comment**	**Condition**
UE test loop mode B LB setup			
IP PDU delay	'0000 1000'B	8 seconds	

8.1.2.7 RRC connection establishment / 0% access probability for AC 0 to 9, AC 10 is barred, AC 11 to 15 are not barred, access for UE with access class in the range 11 to 15 is allowed

8.1.2.7.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_IDLE state having an Access Class with a value in the range 11..15 and
having received a SystemInformationBlockType2 indicating 0% access probability for AC 0..9 for both
MO call and MO signalling, access restriction for AC 10 and no restriction for AC 11..15 for both MO
call and MO signalling }
ensure that {
  when { UE has user data pending }
    then { UE transmits an RRCConnectionRequest message }
            }
```

(2)

```
with { UE in E-UTRA RRC_IDLE state having an Access Class with a value in the range 11..15 }
ensure that {
  when { UE reselects a new cell which belongs to different TA and broadcasts a
SystemInformationBlockType2 indicating 0% access probability for AC 0..9 for both MO call and MO
signalling, access restriction for AC 10 and no restriction for AC 11..15 for both MO call and MO
signalling }
    then { UE transmits an RRCConnectionRequest message }
            }
```

8.1.2.7.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.3.2.

[TS 36.331, clause 5.3.3.2]

The UE initiates the procedure when upper layers request establishment of an RRC connection while the UE is in RRC_IDLE.

Upon initiation of the procedure, the UE shall:

1> if the UE is establishing the RRC connection for mobile terminating calls:

2> if timer T302 is running:

...

2> else:

3> consider access to the cell as not barred;

1> else if the UE is establishing the RRC connection for emergency calls:

...

1> else if the UE is establishing the RRC connection for mobile originating calls:

2> if timer T302 or T303 is running:

...

2> else if *SystemInformationBlockType2* includes the *ac-BarringInfo* and the *ac-BarringForMO-Data* is present:

3> if the UE has one or more Access Classes, as stored on the USIM, with a value in the range 11..15, which is valid for the UE to use according to TS 22.011 [10] and TS 23.122 [11], and

3> for at least one of these Access Classes the corresponding bit in the *ac-BarringForSpecialAC* contained in *ac-BarringForMO-Data* is set to *zero*:

4> consider access to the cell as not barred;

3> else:

...

1> else (the UE is establishing the RRC connection for mobile originating signalling):

2> if timer T302 or T305 is running:

...

2> else if *SystemInformationBlockType2* includes the *ac-BarringInfo* and the *ac-BarringForMO-Signalling* is present:

3> if the UE has one or more Access Classes, as stored on the USIM, with a value in the range 11..15, which is valid for the UE to use according to TS 22.011 [10] and TS 23.122 [11], and

3> for at least one of these Access Classes the corresponding bit in the *ac-BarringForSpecialAC* contained in *ac-BarringForMO-Signalling* is set to *zero*:

4> consider access to the cell as not barred;

3> else:

...

1> if access to the cell, as specified above, is not barred:

2> apply the default physical channel configuration as specified in 9.2.4;

2> apply the default semi-persistent scheduling configuration as specified in 9.2.3;

2> apply the default MAC main configuration as specified in 9.2.2;

2> apply the CCCH configuration as specified in 9.1.1.2;

2> apply the *timeAlignmentTimerCommon* included in *SystemInformationBlockType2*;

2> start timer T300;

2> initiate transmission of the *RRCConnectionRequest* message in accordance with 5.3.3.3;

NOTE 2: Upon initiating the connection establishment procedure, the UE is not required to ensure it maintains up to date system information applicable only for UEs in RRC_IDLE state. However, the UE needs to perform system information acquisition upon cell re-selection.

...

8.1.2.7.3 Test description

8.1.2.7.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 11 (HPLMN in different TA).

UE:

- USIM set to Type C in 34.108[5] subclause 8.3.2.15 is inserted.

Preamble:

- The UE is in state Loopback Activated (state 4) with condition UE TEST LOOP MODE B on Cell 1 according to [18].

8.1.2.7.3.2 Test procedure sequence

Table 8.1.2.7.3.2-1 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 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 8.1.2.7.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 11	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-85	-91	The power level values are assigned to satisfy SrxlevCell 1 > SrxlevCell 11.
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	-79	The power level values are assigned to satisfy RCell 1 < RCell 11.

Table 8.1.2.7.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
0	The SS transmits one IP packet to the UE on the DRB associated with the default EPS bearer context on Cell 1.	-	-	-	-
0A	Wait for 1 s after the IP packet has been transmitted in step 0. (Note 1)	-	-	-	-
1	The SS transmits an *RRCConnectionRelease* message on Cell 1.	<--	*RRCConnectionRelease*	-	-
2	Check: Does the UE transmit an *RRCConnectionRequest* message on Cell 1?	-->	*RRCConnectionRequest*	1	P
3	The SS transmits an *RRCConnectionSetup* message on Cell 1.	<--	*RRCConnectionSetup*	-	-
3A	The UE transmits an *RRCConnectionSetupComplete* message on Cell 1. This message includes a SERVICE REQUEST message.	-->	*RRCConnectionSetupComplete*	-	-
3B	The SS transmits a *SecurityModeCommand* message on Cell 1.	<--	*SecurityModeCommand*	-	-
3C	The UE transmits a *SecurityModeComplete* message on Cell 1.	-->	*SecurityModeComplete*	-	-
3D	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
-	EXCEPTION: Step 3E and 3EA can occur in any order	-	-	-	-
3E	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3EA	The UE loop backs the IP packet received in step 0 on the DRB associated with the default EPS bearer context on Cell 1.	-	-	-	-
3F	The SS transmits an *RRCConnectionRelease* message on Cell 1.	<--	*RRCConnectionRelease*	-	-
3G	Wait for 5 s for the UE to enter E-UTRA RRC_IDLE state.	-	-	-	-
4	The SS changes Cell 1 and Cell 11 level according to the row "T1" in table 8.1.2.7.3.2-1.	-	-	-	-
4A	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.7 indicate that the UE is camped on E-UTRAN Cell 11 and that the UE has performed TAU procedure with establishment cause 'high priority access'? NOTE: The UE performs a TAU procedure and the RRC connection is released.	-	-	2	-
5-10	Void	-	-	-	-
11	Wait for 5 s for the UE to enter E-UTRA RRC_IDLE state.	-	-	-	-
12-20	Void	-	-	-	-
21	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.2 indicate that the UE is in E-UTRA RRC_IDLE state on Cell 11 and that the UE responds to paging with establishment cause 'high priority access'?	-	-	1,2	-
Note 1: The 1 second delay is used to secure that the UE have received and forwarded the IP Packet transmitted by the SS in step 0 to the UE test loop function before the *RRCConnectionRelease* message is sent by the SS in step 1.					

8.1.2.7.3.3 Specific message contents

Table 8.1.2.7.3.3-1: *SystemInformationBlockType2* for Cell 1 and Cell 11 (preamble, Table 8.1.2.7.3.2-2)

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	TRUE		
ac-BarringForMO-Signalling SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s4		
ac-BarringForSpecialAC	'00000'B		
}			
ac-BarringForMO-Data SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s4		
ac-BarringForSpecialAC	'00000'B		
}			
}			
}			

Table 8.1.2.7.3.3-1A: CLOSE UE TEST LOOP (preamble, Table 8.1.2.7.3.2-2)

Derivation Path: 36.508, Table 4.7A-3, condition UE TEST LOOP MODE B			
Information Element	**Value/remark**	**Comment**	**Condition**
UE test loop mode B LB setup			
IP PDU delay	'0000 1010'B	10 seconds	

Table 8.1.2.7.3.3-2: *RRCConnectionRequest* (step 2, step 4A and step 21, Table 8.1.2.7.3.2-2)

Derivation Path: 36.508, Table 4.6.1-16			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionRequest-r8 SEQUENCE {			
establishmentCause	highPriorityAccess		
}			
}			
}			

Table 8.1.2.7.3.3-3: Void

Table 8.1.2.7.3.3-4: Void

Table 8.1.2.7.3.3-5: Void

Table 8.1.2.7.3.3-6: Void

Table 8.1.2.7.3.3-7: Void

Table 8.1.2.7.3.3-8: *RRCConnectionReconfiguration* (step 3D, Table 8.1.2.7.3.2-2)

Derivation Path: 36.508 Table 4.6.1-8, condition SRB2-DRB(1, 0)

8.1.2.8 RRC connection establishment / Range of access baring time

8.1.2.8.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_IDLE state with T303 running }
```

```
ensure that {
  when { UE is requested to make an outgoing call }
    then { UE does not transmit any RRCConnectionRequest message }
           }
```

(2)

```
with { UE in E-UTRA RRC_IDLE state having received SystemInformationBlockType2 with no restriction }
ensure that {
  when { UE is requested to make an outgoing call }
    then { UE transmits an RRCConnectionRequest message }
           }
```

8.1.2.8.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.3.2.

[TS 36.331, clause 5.3.3.2]

The UE initiates the procedure when upper layers request establishment of an RRC connection while the UE is in RRC_IDLE.

Upon initiation of the procedure, the UE shall:

1> if the UE is establishing the RRC connection for mobile terminating calls:

2> if timer T302 is running:

3> consider access to the cell as barred;

2> else:

3> consider access to the cell as not barred;

1> else if the UE is establishing the RRC connection for emergency calls:

2> if *SystemInformationBlockType2* includes the *ac-BarringInfo*:

3> if the *ac-BarringForEmergency* is set to *FALSE*:

4> consider access to the cell as not barred;

3> else if the UE has one or more Access Classes, as stored on the USIM, with a value in the range 11..15, which is valid for the UE to use according to TS 22.011 [10] and TS 23.122 [11]:

NOTE 1: ACs 12, 13, 14 are only valid for use in the home country and ACs 11, 15 are only valid for use in the HPLMN/ EHPLMN.

4> if the *ac-BarringInfo* includes *ac-BarringForMO-Data*, and for all of the valid Access Classes for the UE, the corresponding bit in the *ac-BarringForSpecialAC* contained in *ac-BarringForMO-Data* is set to *one*:

5> consider access to the cell as barred;

4> else:

5> consider access to the cell as not barred;

3> else:

4> consider access to the cell as barred;

2> else:

3> consider access to the cell as not barred;

1> else if the UE is establishing the RRC connection for mobile originating calls:

2> if timer T302 or T303 is running:

3> consider access to the cell as barred;

2> else if *SystemInformationBlockType2* includes the *ac-BarringInfo* and the *ac-BarringForMO-Data* is present:

3> if the UE has one or more Access Classes, as stored on the USIM, with a value in the range 11..15, which is valid for the UE to use according to TS 22.011 [10] and TS 23.122 [11], and

3> for at least one of these Access Classes the corresponding bit in the *ac-BarringForSpecialAC* contained in *ac-BarringForMO-Data* is set to *zero*:

4> consider access to the cell as not barred;

3> else:

4> draw a random number '*rand*' uniformly distributed in the range: $0 \leq rand < 1$;

4> if '*rand*' is lower than the value indicated by *ac-BarringFactor* included in *ac-BarringForMO-Data*:

5> consider access to the cell as not barred;

4> else:

5> consider access to the cell as barred;

2> else:

3> consider access to the cell as not barred;

1> else (the UE is establishing the RRC connection for mobile originating signalling):

2> if timer T302 or T305 is running:

3> consider access to the cell as barred;

2> else if *SystemInformationBlockType2* includes the *ac-BarringInfo* and the *ac-BarringForMO-Signalling* is present:

3> if the UE has one or more Access Classes, as stored on the USIM, with a value in the range 11..15, which is valid for the UE to use according to TS 22.011 [10] and TS 23.122 [11], and

3> for at least one of these Access Classes the corresponding bit in the *ac-BarringForSpecialAC* contained in *ac-BarringForMO-Signalling* is set to *zero*:

4> consider access to the cell as not barred;

3> else:

4> draw a random number '*rand*' uniformly distributed in the range: $0 \leq rand < 1$;

4> if '*rand*' is lower than the value indicated by *ac-BarringFactor* included in *ac-BarringForMO-Signalling*:

5> consider access to the cell as not barred;

4> else:

5> consider access to the cell as barred;

2> else:

3> consider access to the cell as not barred;

1> if access to the cell, as specified above, is not barred:

2> apply the default physical channel configuration as specified in 9.2.4;

2> apply the default semi-persistent scheduling configuration as specified in 9.2.3;

2> apply the default MAC main configuration as specified in 9.2.2;

2> apply the CCCH configuration as specified in 9.1.1.2;

2> apply the *timeAlignmentTimerCommon* included in *SystemInformationBlockType2*;

2> start timer T300;

2> initiate transmission of the *RRCConnectionRequest* message in accordance with 5.3.3.3;

NOTE 2: Upon initiating the connection establishment procedure, the UE is not required to ensure it maintains up to date system information applicable only for UEs in RRC_IDLE state. However, the UE needs to perform system information acquisition upon cell re-selection.

1> else:

2> if the UE is establishing the RRC connection for mobile originating calls and if both timers T302 and T303 are not running:

3> draw a random number '*rand*' that is uniformly distributed in the range $0 \leq rand < 1$;

3> start timer T303 with the timer value calculated as follows, using the *ac-BarringTime* included in *ac-BarringForMO-Data*:

$T303 = (0.7 + 0.6 * rand) * ac\text{-}BarringTime$

3> inform upper layers about the failure to establish the RRC connection and that access barring for mobile originating calls is applicable, upon which the procedure ends;

2> else if the UE is establishing the RRC connection for mobile originating signalling and if both timers T302 and T305 are not running:

3> draw a random number '*rand*' that is uniformly distributed in the range $0 \leq rand < 1$;

3> start timer T305 with the timer value calculated as follows, using the *ac-BarringTime* included in *ac-BarringForMO-Signalling*:

$T305 = (0.7 + 0.6 * rand) * ac\text{-}BarringTime$

3> inform upper layers about the failure to establish the RRC connection and that access barring for mobile originating signalling is applicable, upon which the procedure ends;

2> else if the UE is establishing the RRC connection for emergency calls:

3> inform upper layers about the failure to establish the RRC connection and that access barring for emergency calls is applicable, upon which the procedure ends;

2> else:

3> inform upper layers about the failure to establish the RRC connection, upon which the procedure ends;

8.1.2.8.3 Test description

8.1.2.8.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

- The UE is in Registered, Idle mode state (state 2) according to [18].

8.1.2.8.3.2 Test procedure sequence

Table 8.1.2.8.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits a *Paging* message including *systemInfoModification*. (Note 3)	<--	*Paging*	-	-
2	The SS changes *SystemInformationBlockType2* parameters to 0% access probability for MO calls.	-	-	-	-
3	Wait for 15 s for the UE to receive system information.	-	-	-	-
4	Void	-	-	-	-
5	Cause the UE to request connectivity to an additional PDN. (Note 5)	-	-	-	-
5A	The UE does not transmit any *RRCConnectionRequest* message (The UE starts T303) (Note 2)	-	-	-	-
5B	Void	-	-	-	-
6	Cause the UE to request connectivity to an additional PDN. (Note 5)	-	-	-	-
7	Check: Does the UE transmit an *RRCConnectionRequest* message within 5s?	-->	*RRCConnectionRequest*	1	F
8	Wait for 20 s to ensure that T303 expires.	-	-	-	-
9	The SS transmits a *Paging* message including *systemInfoModification* (Note 3).	<--	*Paging*	-	-
10	The SS changes *SystemInformationBlockType2* parameters to default values (Note 4).	-	-	-	-
11	The SS starts timer Timer_1 = 20 s.	-	-	-	-
-	EXCEPTION: Steps 12a1 to 12 b3 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.(Note 6)	-	-	-	-
12a 1	Check: Does the UE transmit an *RRCConnectionRequest* message? SS stops timer Timer_1	-->	*RRCConnectionRequest*	2	P
12b 1	The SS waits for Timer_1 expiry	-	-	-	-
12 b2	Cause the UE to request connectivity to an additional PDN. (Note 5)	-	-	-	-
12b 3	Check: Does the UE transmit an *RRCConnectionRequest* message?	-->	*RRCConnectionRequest*	2	P
13	Void	-	-	-	-
14-23	Steps 2a2 to 6 of the generic test procedure in TS 36.508 [18] subclause 6.4.3.2 are performed on Cell 1	-	-	-	-

Note 1: Void.
Note 2: The UE is establishing the RRC connection for mobile originating calls, and consider access to the cell as barred, the UE should draw a rand number “rand” in the range $0 \leq rand < 1$, and start T303 with value set to the maximum value: T303= $(0.7 + 0.6 * rand) * ac\text{-}BarringTime$.
Note 3: To guarantee that the UE will receive at least one Paging in the Modification Period preceding the SysInfo change, SS should send the Paging message in every eligible PO in this Modification Period.
Note 4: The default values refer to TS36.508 table 4.4.3.3-1.
Note 5: The triggers in step 5, step 6 and step 12 b2 are the same as in the generic procedure in 36.508 clause 6.4.3.2.
Note 6: A UE may send RRCConnectionRequest for the pending procedure triggered at step 6.

8.1.2.8.3.3 Specific message contents

Table 8.1.2.8.3.3-1: *Paging* (step 1 and step 9, Table 8.1.2.8.3.2-1)

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

Table 8.1.2.8.3.3-2: *SystemInformationBlockType2* (step 2, Table 8.1.2.8.3.2-1)

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE	For AC 10	
ac-BarringForMO-Signalling SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s16		
ac-BarringForSpecialAC	'11111'B		
}			
ac-BarringForMO-Data SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s16		
ac-BarringForSpecialAC	'11111'B	For AC 11..15	
}			
}			
}			

8.1.2.9 RRC Connection Establishment / 0% access probability for MO calls, non-zero percent access probability for MO signalling

8.1.2.9.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_IDLE state }
ensure that {
  when { UE reselects a new cell which belongs to different TA and broadcasts
SystemInformationBlockType2 indicating non zero percent access probability for MO signalling }
    then { UE does not transmit any RRCConnectionRequest message when access to the cell is
considered as barred and UE transmits an RRCConnectionRequest message when access to the cell is
considered as not barred }
           }
```

(2)

```
with { UE in E-UTRA RRC_IDLE state having received SystemInformationBlockType2 indicating 0% access
probability for MO call }
ensure that {
  when { UE has user data pending }
    then { UE does not transmit any RRCConnectionRequest message }
           }
```

8.1.2.9.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in : TS 36.331, clause 5.3.3.2.

[TS 36.331, clause 5.3.3.2]

The UE initiates the procedure when upper layers request establishment of an RRC connection while the UE is in RRC_IDLE.

Upon initiation of the procedure, the UE shall:

1> if the UE is establishing the RRC connection for mobile terminating calls:

...

1> else if the UE is establishing the RRC connection for emergency calls:

...

1> else if the UE is establishing the RRC connection for mobile originating calls:

2> if timer T302 or T303 is running:

3> consider access to the cell as barred;

2> else if *SystemInformationBlockType2* includes the *ac-BarringInfo* and the *ac-BarringForMO-Data* is present:

3> if the UE has one or more Access Classes, as stored on the USIM, with a value in the range 11..15, which is valid for the UE to use according to TS 22.011 [10] and TS 23.122 [11], and

3> for at least one of these Access Classes the corresponding bit in the *ac-BarringForSpecialAC* contained in *ac-BarringForMO-Data* is set to *zero*:

4> consider access to the cell as not barred;

3> else:

4> draw a random number '*rand*' uniformly distributed in the range: $0 \leq rand < 1$;

4> if '*rand*' is lower than the value indicated by *ac-BarringFactor* included in *ac-BarringForMO-Data*:

5> consider access to the cell as not barred;

4> else:

5> consider access to the cell as barred;

2> else:

3> consider access to the cell as not barred;

1> else (the UE is establishing the RRC connection for mobile originating signalling):

2> if timer T302 or T305 is running:

3> consider access to the cell as barred;

2> else if *SystemInformationBlockType2* includes the *ac-BarringInfo* and the *ac-BarringForMO-Signalling* is present:

3> if the UE has one or more Access Classes, as stored on the USIM, with a value in the range 11..15, which is valid for the UE to use according to TS 22.011 [10] and TS 23.122 [11], and

3> for at least one of these Access Classes the corresponding bit in the *ac-BarringForSpecialAC* contained in *ac-BarringForMO-Signalling* is set to *zero*:

4> consider access to the cell as not barred;

3> else:

4> draw a random number '*rand*' uniformly distributed in the range: $0 \leq rand < 1$;

4> if '*rand*' is lower than the value indicated by *ac-BarringFactor* included in *ac-BarringForMO-Signalling*:

5> consider access to the cell as not barred;

4> else:

5> consider access to the cell as barred;

2> else:

3> consider access to the cell as not barred;

1> if access to the cell, as specified above, is not barred:

2> apply the default physical channel configuration as specified in 9.2.4;

2> apply the default semi-persistent scheduling configuration as specified in 9.2.3;

2> apply the default MAC main configuration as specified in 9.2.2;

2> apply the CCCH configuration as specified in 9.1.1.2;

2> apply the *timeAlignmentTimerCommon* included in *SystemInformationBlockType2*;

2> start timer T300;

2> initiate transmission of the *RRCConnectionRequest* message in accordance with 5.3.3.3;

NOTE 2: Upon initiating the connection establishment procedure, the UE is not required to ensure it maintains up to date system information applicable only for UEs in RRC_IDLE state. However, the UE needs to perform system information acquisition upon cell re-selection.

1> else:

2> if the UE is establishing the RRC connection for mobile originating calls and if both timers T302 and T303 are not running:

...

2> else if the UE is establishing the RRC connection for mobile originating signalling and if both timers T302 and T305 are not running:

3> draw a random number '*rand*' that is uniformly distributed in the range $0 \leq rand < 1$;

3> start timer T305 with the timer value calculated as follows, using the *ac-BarringTime* included in *ac-BarringForMO-Signalling*:

$T305 = (0.7 + 0.6 * rand) * ac\text{-}BarringTime$

3> inform upper layers about the failure to establish the RRC connection and that access barring for mobile originating signalling is applicable, upon which the procedure ends;

8.1.2.9.3 Test description

8.1.2.9.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 11.

UE:

None.

Preamble:

- The UE is in state Loopback Activated (state 4) with condition UE TEST LOOP MODE B on Cell 1 according to [18].

8.1.2.9.3.2 Test procedure sequence

Table 8.1.2.9.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 11	Remark
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	-79	The power level values are assigned to satisfy $R_{Cell\ 1} < R_{Cell\ 11}$.
T2	Cell-specific RS EPRE	dBm/15 kHz	-85	-91	The power level values are assigned to satisfy $R_{Cell\ 1} > R_{Cell\ 11}$.

Table 8.1.2.9.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionRelease* message on Cell 1.	<--	*RRCConnectionRelease*	-	-
2	Wait for 5 s for the UE to enter E-UTRA RRC_IDLE state.	-	-	-	-
3	The SS initializes internal counters: K to 0 and L to 0.	-	-	-	-
-	EXCEPTION: Steps 4 to 5b15 shall be repeated maximum 50 times unless K > 0 and L >0. (Note 1)	-	-	-	-
4	The SS changes the power level setting according to the row “T1” in table 8.1.2.9.3.2-1.	-	-	-	-
-	EXCEPTION: Steps 5a1 to 5b15 describe behaviours which vary depending on whether the UE transmits an *RRCConnectionRequest* message or not.	-	-	-	-
5a1	IF the UE does not transmit any *RRCConnectionRequest* message within 34 s when K=0 and L=0 and within 8 s for other repeat times, i.e. K $\neq$0 or L$\neq$0 (Note 2) THEN the SS increments the counter K by 1.	-	-	-	-
5a2	The SS changes the power level setting according to the row “T2” in table 8.1.2.9.3.2-1.	-	-	-	-
5a3	The SS waits for 20s for the UE to perform cell reselection procedure. (Note 3)	-	-	-	-
5b1	ELSE IF the UE transmits an *RRCConnectionRequest* message on Cell 11 THEN the SS increments the counter L by 1.	-->	*RRCConnectionRequest*	-	-
5b2-5b6	Steps 2 to 6 of the generic test procedure in TS 36.508 [18] subclause 6.4.2.7 are performed on Cell 11. Note: The UE performs a TAU procedure and the RRC connection is released.	-	-	-	-
5b7	Wait for 5 s for the UE to enter E-UTRA RRC_IDLE state.	-	-	-	-
5b8	The SS changes the power level setting according to the row “T2” in table 8.1.2.9.3.2-1.	-	-	-	-
5b9	The UE transmits an *RRCConnectionRequest* message on Cell 1.	-->	*RRCConnectionRequest*	-	-
5b10 - 5b14	Steps 2 to 6 of the generic test procedure in TS 36.508 [18] subclause 6.4.2.7 are performed on Cell 1. Note: The UE performs a TAU procedure and the RRC connection is released.	-	-	-	-
5b15	Wait for 5 s for the UE to enter E-UTRA RRC_IDLE state.	-	-	-	-
6	Check: Is the counter K > 0 and L > 0?	-	-	1	P
7	Generic test procedure in TS 36.508 subclause 4.5.3.3 is performed on Cell 1. NOTE: The UE performs the establishment of the new data radio bearer associated with the default EPS bearer context.	-	-	-	-
8	The SS transmits one IP packet to the UE on the DRB associated with the default EPS bearer context on Cell 1.	-	-	-	-
9	Wait for 1 s after the IP packet has been transmitted in step 8. (Note 4)	-	-	-	-
10	The SS transmits an *RRCConnectionRelease* message on Cell 1.	<--	*RRCConnectionRelease*	-	-
11	Check: Does the UE transmit an *RRCConnectionRequest* message on Cell 1 within 30s?	-->	*RRCConnectionRequest*	2	F
-	EXCEPTION: Step 21 and Step 22a1 can happen in any order.	-	-	-	-

12-21	Check: Does the test result of steps 1 to 10 generic test procedure in TS 36.508 subclause 6.4.2.2 indicate that the UE is in E-UTRA RRC_IDLE state on Cell 1?	-	-	1,2	-
-	EXCEPTION: Step 22a1 describes behaviour that depends on UE implementation; the "lower case letter" identifies a step sequence that takes place if the UE has user data pending.	-	-	-	-
22a1	IF the UE has user data pending THEN the UE loop backs the IP packet received in step 8 on the DRB associated with the default EPS bearer context on Cell 1 within 10 s.	-	-	-	-

Note 1: There is an extremely low probability that the UE originating calls are barred, or not barred, 50 times consecutively. (The probability is 1.78×10^{-15}). Therefore, 50 times is enough number of trials for this test case.
Note 2: The UE starts T305.
Note 3: The UE stops T305 upon cell reselection.
Note 4: The 1 second delay is used to secure that the UE have received and forwarded the IP Packet transmitted by the SS in step 8 to the UE test loop function before the *RRCConnectionRelease* message is sent by the SS in step 10.

8.1.2.9.3.3 Specific message contents

Table 8.1.2.9.3.3-1: *SystemInformationBlockType2* for Cell 1 (preamble and all steps, Table 8.1.2.9.3.2-2)

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling SEQUENCE {}	Not present		
ac-BarringForMO-Data SEQUENCE {			
ac-BarringFactor	p00		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'11111'B		
}			
}			
}			

Table 8.1.2.9.3.3-2: *SystemInformationBlockType2* for Cell 11 (preamble and all steps, Table 8.1.2.9.3.2-2)

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling SEQUENCE {			
ac-BarringFactor	p50		
ac-BarringTime	s64		
ac-BarringForSpecialAC	'00000'B		
}			
ac-BarringForMO-Data SEQUENCE {}	Not present		
}			
}			

Table 8.1.2.9.3.3-3: CLOSE UE TEST LOOP (preamble, Table 8.1.2.9.3.2-2)

Derivation Path: 36.508, Table 4.7A-3, condition UE TEST LOOP MODE B			
Information Element	**Value/remark**	**Comment**	**Condition**
UE test loop mode B LB setup			
IP PDU delay	'0000 0101'B	5 seconds	

Table 8.1.2.9.3.3-4: *RRCConnectionRequest* (step 5b1 and step 5b9, Table 8.1.2.9.3.2-2)

Derivation Path: 36.508, Table 4.6.1-16			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionRequest-r8 SEQUENCE {			
establishmentCause	mo-Signalling		
}			
}			
}			

8.1.2.10 Void

8.1.2.11 RRC connection establishment of emergency call

8.1.2.11.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_IDLE state }
ensure that {
  when { UE is requested to make an outgoing emergency call }
   then { UE transmits an RRCConnectionRequest message }
          }
```

8.1.2.11.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331 clause 5.3.3.2.

[TS 36.331, clause 5.3.3.2]

The UE initiates the procedure when upper layers request establishment of an RRC connection while the UE is in RRC_IDLE.

Upon initiation of the procedure, the UE shall:

…

1> else if the UE is establishing the RRC connection for emergency calls:

2> if *SystemInformationBlockType2* includes the *ac-BarringInfo*:

…

2> else:

3> consider access to the cell as not barred;

…

1> if access to the cell, as specified above, is not barred:

2> apply the default physical channel configuration as specified in 9.2.4;

2> apply the default semi-persistent scheduling configuration as specified in 9.2.3;

2> apply the default MAC main configuration as specified in 9.2.2;

2> apply the CCCH configuration as specified in 9.1.1.2;

2> apply the *timeAlignmentTimerCommon* included in *SystemInformationBlockType2*;

2> start timer T300;

2> initiate transmission of the *RRCConnectionRequest* message in accordance with 5.3.3.3;

[TS 36.331, clause 5.3.3.3]

The UE shall set the contents of *RRCConnectionRequest* message as follows:

…

1> set the *establishmentCause* in accordance with the information received from upper layers;

The UE shall submit the *RRCConnectionRequest* message to lower layers for transmission.

8.1.2.11.3 Test description

8.1.2.11.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

- The UE is in state Registered, Idle mode (state 2) according to [18].

8.1.2.11.3.2 Test procedure sequence

Table 8.1.2.11.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE attempt an IMS emergency call	-	-	-	-
2	Check: Does the UE transmit an *RRCConnectionRequest* message?	-->	*RRCConnectionRequest*	1	P
3-15	Steps 3 to 15 of the generic test procedure for IMS Emergency call establishment in EUTRA: Normal Service (TS 36.508 4.5A.4.4-1).	-	-	-	-
16	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	-

Table 8.1.2.11.3.2-2: Void

8.1.2.11.3.3 Specific message contents

Table 8.1.2.11.3.3-1: *RRCConnectionRequest* (step 2, Table 8.1.2.11.3.2-1)

Derivation Path: 36.508, Table 4.6.1-16			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionRequest-r8 SEQUENCE {			
establishmentCause	emergency		
}			
}			
}			

8.1.2.12 RRC connection establishment of emergency call / Limited Service

8.1.2.12.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_IDLE state }
ensure that {
  when { UE camp on an acceptable cell and is requested to make an outgoing emergency call }
   then { UE transmits an RRCConnectionRequest message }
          }
```

8.1.2.12.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.304 clause 4.3, 5.2.3.1 and TS 36.331 clause 5.3.3.2.

[TS 36.304, clause 4.3]

This clause defines the level of service that may be provided by the network to a UE in Idle mode.

The action of camping on a cell is necessary to get access to some services. Three levels of services are defined for UE:

- Limited service (emergency calls, ETWS and CMAS on an acceptable cell)
- Normal service (for public use on a suitable cell)
- Operator service (for operators only on a reserved cell)

Furthermore, the cells are categorised according to which services they offer:

acceptable cell:

An "acceptable cell" is a cell on which the UE may camp to obtain limited service (originate emergency calls and receive ETWS and CMAS notifications). Such a cell shall fulfil the following requirements, which is the minimum set of requirements to initiate an emergency call and to receive ETWS and CMAS notification in a E-UTRAN network:

- The cell is not barred, see subclause 5.3.1;
- The cell selection criteria are fulfilled, see subclause 5.2.3.2;

suitable cell:

A "suitable cell" is a cell on which the UE may camp on to obtain normal service. The UE shall have a valid USIM and such a cell shall fulfil all the following requirements.

- The cell is part of either:
  - the selected PLMN, or:
  - the registered PLMN, or:
  - a PLMN of the Equivalent PLMN list

  according to the latest information provided by NAS:
- The cell is not barred, see subclause 5.3.1;
- The cell is part of at least one TA that is not part of the list of "forbidden tracking areas for roaming", which belongs to a PLMN that fulfils the first bullet above;
- The cell selection criteria are fulfilled, see subclause 5.2.3.2;
- For a CSG cell, the CSG ID is part of the CSG whitelist of the UE.

If more than one PLMN identity is broadcast in the cell, the cell is considered to be part of all TAs with TAIs constructed from the PLMN identities and the TAC broadcast in the cell.

[TS 36.304, clause 5.2.3.1]

The UE shall use one of the following two cell selection procedures:

a) Initial Cell Selection

This procedure requires no prior knowledge of which RF channels are E-UTRA carriers. The UE shall scan all RF channels in the E-UTRA bands according to its capabilities to find a suitable cell. On each carrier frequency, the UE need only search for the strongest cell. Once a suitable cell is found this cell shall be selected.

b) Stored Information Cell Selection

This procedure requires stored information of carrier frequencies and optionally also information on cell parameters, from previously received measurement control information elements or from previously detected cells. Once the UE has found a suitable cell the UE shall select it. If no suitable cell is found the Initial Cell Selection procedure shall be started.

NOTE: Priorities between different frequencies or RATs provided to the UE by system information or dedicated signalling are not used in the cell selection process.

[TS 36.331, clause 5.3.3.2]

The UE initiates the procedure when upper layers request establishment of an RRC connection while the UE is in RRC_IDLE.

Upon initiation of the procedure, the UE shall:

…

1> else if the UE is establishing the RRC connection for emergency calls:

2> if *SystemInformationBlockType2* includes the *ac-BarringInfo*:

…

2> else:

3> consider access to the cell as not barred;

…

1> if access to the cell, as specified above, is not barred:

2> apply the default physical channel configuration as specified in 9.2.4;

2> apply the default semi-persistent scheduling configuration as specified in 9.2.3;

2> apply the default MAC main configuration as specified in 9.2.2;

2> apply the CCCH configuration as specified in 9.1.1.2;

2> apply the *timeAlignmentTimerCommon* included in *SystemInformationBlockType2*;

2> start timer T300;

2> initiate transmission of the *RRCConnectionRequest* message in accordance with 5.3.3.3;

[TS 36.331, clause 5.3.3.3]

The UE shall set the contents of *RRCConnectionRequest* message as follows:

…

1> set the *establishmentCause* in accordance with the information received from upper layers;

The UE shall submit the *RRCConnectionRequest* message to lower layers for transmission.

[TS 36.331, clause 6.2.2]

***SystemInformationBlockType1* field descriptions**
…
ims-EmergencySupport Indicates whether the cell supports IMS emergency bearer services for UEs in limited service mode. If absent, IMS emergency call is not supported by the network in the cell for UEs in limited service mode.

8.1.2.12.3 Test description

8.1.2.12.3.1 Pre-test conditions

System Simulator:

- Cell 1
- The PLMN is defined in Table 8.1.2.12.3.1-1.

Table 8.1.2.12.3.1–1: PLMN identifier

Cell	PLMN name
1	PLMN4

UE:

- The UE is equipped with a USIM containing default values except for those listed in Table 8.1.2.12.3.1-2.

Table 8.1.2.12.3.1–2: USIM configuration

USIM field	Priority	Value	Access Technology Identifier
EF_{IMSI}		The HPLMN (MCC+MNC) of the IMSI is set to PLMN1.	
EF_{FPLMN}		PLMN4	
$EF_{PLMNwAcT}$	1	Default	E-UTRAN
$EF_{OPLMNwACT}$	1	PLMN1	E-UTRAN
$EF_{HPLMNwAcT}$	1	PLMN1	E-UTRAN

Preamble:

- The UE is Switched OFF (State 1) according to [18].

8.1.2.12.3.2 Test procedure sequence

Table 8.1.2.12.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Power on the UE.	-	-	-	-
2	Wait 60s for the UE to camp on Cell 1 as an acceptable cell.	-	-	-	-
3	Make the UE attempt an IMS emergency call	-	-	-	-
4	Check: Does the UE transmit an *RRCConnectionRequest* message?	-->	*RRCConnectionRequest*	1	P
5-21	Steps 3 to 19 of the generic test procedure for IMS Emergency call establishment in EUTRA: Limited Service (TS 36.508 4.5A.5.3-1).	-	-	-	-

Table 8.1.2.12.3.2-2: Void

8.1.2.12.3.3 Specific message contents

Table 8.1.2.12.3.3-1: *RRCConnectionRequest* (step 3, Table 8.1.2.12.3.2-1)

Derivation Path: 36.508, Table 4.6.1-16			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionRequest-r8 SEQUENCE {			
establishmentCause	emergency		
}			
}			
}			

Table 8.1.2.12.3.3-2: Void

8.1.2.13 RRC connection establishment / 0% access probability for MO calls, 0% access probability for MO signalling

8.1.2.13.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_IDLE state }
ensure that {
  when { UE reselects a new cell which belongs to different TA and broadcasts
SystemInformationBlockType2 indicating 0% access probability for MO signalling }
    then { UE does not transmit any RRCConnectionRequest message }
           }
```

(2)

```
with { UE in E-UTRA RRC_IDLE state having received SystemInformationBlockType2 indicating 0% access
probability for MO call and for MO signalling }
ensure that {
  when { UE receives a Paging message }
    then { UE transmits an RRCConnectionRequest message }
           }
```

(3)

```
with { UE in E-UTRA RRC_IDLE state having received SystemInformationBlockType2 indicating 0% access
probability for MO call }
ensure that {
  when { UE has user data pending }
    then { UE does not transmit any RRCConnectionRequest message }
           }
```

8.1.2.13.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.3.2.

[TS 36.331, clause 5.3.3.2]

The UE initiates the procedure when upper layers request establishment of an RRC connection while the UE is in RRC_IDLE.

Upon initiation of the procedure, the UE shall:

1> if the UE is establishing the RRC connection for mobile terminating calls:

...

1> else if the UE is establishing the RRC connection for emergency calls:

...

1> else if the UE is establishing the RRC connection for mobile originating calls:

2> if timer T302 or T303 is running:

3> consider access to the cell as barred;

2> else if *SystemInformationBlockType2* includes the *ac-BarringInfo* and the *ac-BarringForMO-Data* is present:

3> if the UE has one or more Access Classes, as stored on the USIM, with a value in the range 11..15, which is valid for the UE to use according to TS 22.011 [10] and TS 23.122 [11], and

3> for at least one of these Access Classes the corresponding bit in the *ac-BarringForSpecialAC* contained in *ac-BarringForMO-Data* is set to *zero*:

4> consider access to the cell as not barred;

3> else:

4> draw a random number '*rand*' uniformly distributed in the range: $0 \leq rand < 1$;

4> if '*rand*' is lower than the value indicated by *ac-BarringFactor* included in *ac-BarringForMO-Data*:

5> consider access to the cell as not barred;

4> else:

5> consider access to the cell as barred;

2> else:

3> consider access to the cell as not barred;

1> else (the UE is establishing the RRC connection for mobile originating signalling):

2> if timer T302 or T305 is running:

3> consider access to the cell as barred;

2> else if *SystemInformationBlockType2* includes the *ac-BarringInfo* and the *ac-BarringForMO-Signalling* is present:

3> if the UE has one or more Access Classes, as stored on the USIM, with a value in the range 11..15, which is valid for the UE to use according to TS 22.011 [10] and TS 23.122 [11], and

3> for at least one of these Access Classes the corresponding bit in the *ac-BarringForSpecialAC* contained in *ac-BarringForMO-Signalling* is set to *zero*:

4> consider access to the cell as not barred;

3> else:

4> draw a random number '*rand*' uniformly distributed in the range: $0 \leq rand < 1$;

4> if '*rand*' is lower than the value indicated by *ac-BarringFactor* included in *ac-BarringForMO-Signalling*:

5> consider access to the cell as not barred;

4> else:

5> consider access to the cell as barred;

2> else:

3> consider access to the cell as not barred;

1> if access to the cell, as specified above, is not barred:

2> apply the default physical channel configuration as specified in 9.2.4;

2> apply the default semi-persistent scheduling configuration as specified in 9.2.3;

2> apply the default MAC main configuration as specified in 9.2.2;

2> apply the CCCH configuration as specified in 9.1.1.2;

2> apply the *timeAlignmentTimerCommon* included in *SystemInformationBlockType2*;

2> start timer T300;

2> initiate transmission of the *RRCConnectionRequest* message in accordance with 5.3.3.3;

NOTE 2: Upon initiating the connection establishment procedure, the UE is not required to ensure it maintains up to date system information applicable only for UEs in RRC_IDLE state. However, the UE needs to perform system information acquisition upon cell re-selection.

1> else:

2> if the UE is establishing the RRC connection for mobile originating calls and if both timers T302 and T303 are not running:

...

2> else if the UE is establishing the RRC connection for mobile originating signalling and if both timers T302 and T305 are not running:

3> draw a random number '*rand*' that is uniformly distributed in the range $0 \leq rand < 1$;

3> start timer T305 with the timer value calculated as follows, using the *ac-BarringTime* included in *ac-BarringForMO-Signalling*:

$T305 = (0.7 + 0.6 * rand) * ac\text{-}BarringTime$

3> inform upper layers about the failure to establish the RRC connection and that access barring for mobile originating signalling is applicable, upon which the procedure ends;

8.1.2.13.3 Test description

8.1.2.13.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 11.

UE:

None.

Preamble:

- The UE is in state Loopback Activated (state 4) with condition UE TEST LOOP MODE B on Cell 1 according to [18].

8.1.2.13.3.2 Test procedure sequence

Table 8.1.2.13.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 11	Remark
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	-79	The power level values are assigned to satisfy $R_{Cell\ 1} < R_{Cell\ 11}$.
T2	Cell-specific RS EPRE	dBm/15 kHz	-85	-91	The power level values are assigned to satisfy $R_{Cell\ 1} > R_{Cell\ 11}$.

Table 8.1.2.13.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionRelease* message on Cell 1.	<--	*RRCConnectionRelease*	-	-
2	Wait for 5 s for the UE to enter E-UTRA RRC_IDLE state.	-	-	-	-
3	The SS changes the power level setting according to the row “T1” in table 8.1.2.13.3.2-1.	-	-	-	-
4	Check: Does the UE transmit an *RRCConnectionRequest* message on Cell 11 within 40s? (Note 1)	-->	*RRCConnectionRequest*	1	F
5	The SS transmits a *Paging* message including a matched identity allocated in Cell 1.	<--	*Paging*	-	-
6	Check: Does the UE transmit an *RRCConnectionRequest* message on Cell 1 within 30s? (Note 2)	-->	*RRCConnectionRequest*	1	F
7	The SS changes the *SystemInformationBlockType1* and *SystemInformationBlockType2* on Cell 1 according to Table 8.1.2.13.3.3-1.	-	-	-	-
7A	Wait for 2.1* modification period (Note 5) to allow the new system information to take effect.	-	-	-	-
7B	The SS changes the power level setting according to the row “T2” in table 8.1.2.13.3.2-1.	-	-	-	-
8	The SS waits for 40s the UE to perform cell reselection procedure (Note 3).	-	-	-	-
9	The SS sends a *Paging* message to the UE on the appropriate paging block, and including the UE identity in one entry of the IE *pagingRecordLists* on Cell 1.	<--	*Paging*	-	-
10	Check: Does the UE transmit an *RRCConnectionRequest* message on Cell 1?	-->	*RRCConnectionRequest*	2	P
11-16	Steps 4 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.	-	-	-	-
17	The SS transmits one IP packet to the UE on the DRB associated with the default EPS bearer context on Cell 1.	-	-	-	-
18	Wait for 1 s after the IP packet has been transmitted in step 17. (Note 4)	-	-	-	-
19	The SS transmits an *RRCConnectionRelease* message on Cell 1.	<--	*RRCConnectionRelease*	-	-
20	Check: Does the UE transmit an *RRCConnectionRequest* message on Cell 1 within 10s?	-->	*RRCConnectionRequest*	3	F
-	EXCEPTION: Step 30 and Step 31a1 can happen in any order.	-	-	-	-
21-30	Check: Does the test result of steps 1 to 10 generic test procedure in TS 36.508 subclause 6.4.2.2 indicate that the UE is in E-UTRA RRC_IDLE state on Cell 1?	-	-	1,2,3	-
-	EXCEPTION: Step 31a1 describes behaviour that depends on UE implementation; the "lower case letter" identifies a step sequence that takes place if the UE has user data pending.	-	-	-	-
31a1	IF the UE has user data pending THEN the UE loop backs the IP packet received in step 17 on the DRB associated with the default EPS	-	-	-	-

	bearer context on Cell 1 within 10 s.				

Note 1: The UE starts T305.
Note 2: In case that the UE did not response to paging on Cell 1, it is considered that the UE is camped on Cell 11.
Note 3: The UE stops T305 upon cell reselection.
Note 4: The 1 second delay is used to secure that the UE have received and forwarded the IP Packet transmitted by the SS in step 17 to the UE test loop function before the *RRCConnectionRelease* message is sent by the SS in step 19.
Note 5: The wait time of 2.1* modification period in step 7A is to allow for the network to paging the system information change during the next modification period, and update the system information at the subsequent modification period. UE should acquire the updated system information within 100ms of the start of modification period.

8.1.2.13.3.3 Specific message contents

Table 8.1.2.13.3.3-1: *SystemInformationBlockType2* for Cell 1 (step 7, Table 8.1.2.13.3.2-2)

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling SEQUENCE {			
ac-BarringFactor	p0		
ac-BarringTime	s8		
ac-BarringForSpecialAC	'11111'B		
}			
ac-BarringForMO-Data SEQUENCE {			
ac-BarringFactor	p0		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'11111'B		
}			
}			
}			

Table 8.1.2.13.3.3-2: *SystemInformationBlockType1* for Cell 1 (step 7, Table 8.1.2.13.3.2-2)

Derivation Path: 36.508, Table 4.4.3.2-3			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType1 ::= SEQUENCE {			
systemInfoValueTag	1		
}			

Table 8.1.2.13.3.3-3: *SystemInformationBlockType2* for Cell 11 (preamble and all steps, Table 8.1.2.13.3.2-2)

Derivation Path: 36.508, Table 4.4.3.3-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType2 ::= SEQUENCE {			
ac-BarringInfo SEQUENCE {			
ac-BarringForEmergency	FALSE		
ac-BarringForMO-Signalling SEQUENCE {			
ac-BarringFactor	p0		
ac-BarringTime	s512		
ac-BarringForSpecialAC	'11111'B		
}			
ac-BarringForMO-Data SEQUENCE {}	Not present		
}			
}			

Table 8.1.2.13.3.3-4: CLOSE UE TEST LOOP (preamble, Table 8.1.2.13.3.2-2)

Derivation Path: 36.508, Table 4.7A-3, condition UE TEST LOOP MODE B			
Information Element	**Value/remark**	**Comment**	**Condition**
UE test loop mode B LB setup			
IP PDU delay	'0000 0101'B	5 seconds	

8.1.2.14 RRC connection establishment / High speed flag

8.1.2.14.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_IDLE state having received a SystemInformationBlockType2 indicating an IE
highSpeedFlag set to true }
ensure that {
  when { UE receives a Paging message }
    then { UE establishes an RRC connection }
          }
```

8.1.2.14.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.2.2.9 and 6.3.2.

[TS 36.331, clause 5.2.2.9]

Upon receiving *SystemInformationBlockType2*, the UE shall:

...

1> apply the configuration included in the *radioResourceConfigCommon*;

[TS 36.331, clause 6.3.2]

***PRACH-Config* field descriptions**
…
highSpeedFlag   Parameter: High-speed-flag, see TS 36.211, [21, 5.7.2].TRUE corresponds to Restricted set and FALSE to Unrestricted set.

8.1.2.14.3 Test description

8.1.2.14.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 2.

UE:

None.

Preamble:

- The UE is in state Registered, Idle mode (state 2) on Cell 1 according to [18].

8.1.2.14.3.2 Test procedure sequence

Table 8.1.2.14.3.2-1 illustrates the downlink power levels to be applied for the cells at various time instants of the test execution. The configuration marked "T1" is applied at the point indicated in the Main behaviour description in Table 8.1.2.14.3.2-2.

Table 8.1.2.14.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 2	Remark
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	-79	The power level values are assigned to satisfy $R_{Cell\ 1} < R_{Cell\ 2}$.

Table 8.1.2.14.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS changes Cell 2 level according to the row "T1" in table 8.1.2.14.3.2-1.	-	-	-	-
2	The SS waits for 40s for the UE to perform cell reselection procedure.	-	-	-	-
3	The SS transmits a *Paging* message on Cell 2.	<--	*Paging*	-	-
4	Check: Does the UE transmit an *RRCConnectionRequest* message on Cell 2?	-->	*RRCConnectionRequest*	1	P
5-10	Steps 4 to 9 of the generic radio bearer establishment procedure (TS 36.508 4.5.3.3-1) are executed to successfully complete the service request procedure on Cell 2.	-	-	-	-
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	-

8.1.2.14.3.3 Specific message contents

Table 8.1.2.14.3.3-1: *SystemInformationBlockType2* for Cell 2 (preamble and all steps, Table 8.1.2.14.3.2-2)

Derivation Path: 36.508 Table 4.4.3.3-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType2 ::= SEQUENCE {			
radioResourceConfigCommon SEQUENCE {			
prach-Config SEQUENCE {			
rootSequenceIndex	86		
prach-ConfigInfo SEQUENCE {			
highSpeedFlag	true		
}			
}			
}			
}			

8.1.3 RRC connection release

8.1.3.1 RRC connection release / Success

8.1.3.1.1 Test Purpose (TP)

(1)

```
with { UE in RRC_CONNECTED state}
ensure that {
  when { UE receives an RRCConnectionRelease message }
   then { UE releases the signalling connection, the established EPS bearer and all radio resources
and enters in RRC_IDLE state }
            }
```

8.1.3.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: 3GPP TS 36.331 clause 5.3.8.3 and 5.3.12.

[TS 36.331, clause 5.3.8.3]

The UE shall:

1> delay the following actions defined in this sub-clause 60ms from the moment the *RRCConnectionRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged, whichever is earlier;

...

1> if the *releaseCause* received in the *RRCConnectionRelease* message indicates '*loadBalancingTAURequired*':

2> perform the actions upon leaving RRC_CONNECTED as specified in 5.3.12, with release cause 'load balancing TAU required';

1> else:

2> perform the actions upon leaving RRC_CONNECTED as specified in 5.3.12, with release cause 'other'.

[TS 36.331, clause 5.3.12]

Upon leaving RRC_CONNECTED, the UE shall:

1> reset MAC;

1> stop all timers that are running except T320;

1> release all radio resources, including release of the RLC entity, the MAC configuration and the associated PDCP entity for all established RBs;

1> indicate the release of the RRC connection to upper layers together with the release cause;

1> if leaving RRC_CONNECTED was not triggered by reception of the *MobilityFromEUTRACommand* message:

2> enter RRC_IDLE by performing cell selection in accordance with the cell selection process, defined for the case of leaving RRC_CONNECTED, as specified in TS 36.304 [4].

8.1.3.1.3 Test description

8.1.3.1.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

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

8.1.3.1.3.2 Test procedure sequence

Table 8.1.3.1.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionRelease* message to release the RRC connection.	<--	*RRCConnectionRelease*	-	-
2	SS waits for 5s.	-	-	-	-
3	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.2 indicate that the UE is in E-UTRA RRC_IDLE state on Cell 1?	-	-	1	-

8.1.3.1.3.3 Specific message content

None.

8.1.3.2 Void

8.1.3.3 Void

8.1.3.4 RRC connection release / Redirection to another E-UTRAN frequency

8.1.3.4.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE receives an RRCConnectionRelease message including an IE redirectedCarrierInfo with
eutra different from the frequency UE was on in RRC_CONNECTED state}
   then { UE enters RRC_IDLE state on new frequency included in IE redirectedCarrierInfo }
          }
```

8.1.3.4.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.8.3, 5.3.12 and TS 36.304, clauses 5.2.4.1, 5.2.7.

[TS 36.331, clause 5.3.8.3]

The UE shall:

1> delay the following actions defined in this sub-clause 60ms from the moment the *RRCConnectionRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged, whichever is earlier;

1> if the *RRCConnectionRelease* message includes the *idleModeMobilityControlInfo*:

…

1> else:

2> apply the cell reselection priority information broadcast in the system information;

1> if the *releaseCause* received in the *RRCConnectionRelease* message indicates '*loadBalancingTAURequired*':

…

1> else:

2> perform the actions upon leaving RRC_CONNECTED as specified in 5.3.12, with release cause 'other'.

[TS 36.331, clause 5.3.12]

Upon leaving RRC_CONNECTED, the UE shall:

…

1> indicate the release of the RRC connection to upper layers together with the release cause;

1> if leaving RRC_CONNECTED was not triggered by reception of the *MobilityFromEUTRACommand* message:

2> enter RRC_IDLE by performing cell selection in accordance with the cell selection process, defined for the case of leaving RRC_CONNECTED, as specified in TS 36.304 [4].

[TS 36.304, clause 5.2.4.1]

…

UE shall only perform cell reselection evaluation for E-UTRAN frequencies and inter-RAT frequencies that are given in system information and for which the UE has a priority provided.

…

[TS 36.304, clause 5.2.7]

On transition from RRC_CONNECTED to RRC_IDLE, UE shall select a suitable cell to camp on according to *redirectedCarrierInfo*, if included in the *RRCConnectionRelease* message. Otherwise UE shall select a suitable cell on an EUTRA carrier. If no suitable cell is found, the UE shall perform a cell selection starting with Stored Information Cell Selection procedure in order to find a suitable cell to camp on.

...

8.1.3.4.3 Test description

8.1.3.4.3.1 Pre-test conditions

System Simulator:

- 2 cells on different E-UTRA frequencies and different tracking areas:
  - Cell 1 serving cell
  - Cell 23 suitable neighbour inter-frequency cell
  - Cell power levels are selected according to [18] so that camping on Cell 1 is guaranteed
  - 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.

8.1.3.4.3.2 Test procedure sequence

Table 8.1.3.4.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionRelease* message (IE *redirectedCarrierInfo* including *eutra* of Cell 23).	<--	*RRCConnectionRelease*	-	-
2	Check: does the test result of generic test procedure in TS 36.508 subclause 6.4.2.7 indicate that the UE is camped on E-UTRAN Cell 23?	-	-	1	-

8.1.3.4.3.3 Specific message contents

Table 8.1.3.4.3.3-1: Conditions for table 8.1.3.4.3.3-3

Condition descriptions
Cell 1 This condition applies to system information transmitted on Cell 1.
Cell 23 This condition applies to system information transmitted on Cell 23.

Table 8.1.3.4.3.3-2: *Void*

Table 8.1.3.4.3.3-3: *SystemInformationBlockType5* for cells 1 and 23 (preamble and all steps, Table 8.1.3.4.3.2-1)

Derivation Path: 36.508 table 4.4.3.3-4			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType5 ::= SEQUENCE {			
interFreqCarrierFreqList SEQUENCE (SIZE (1..maxFreq)) OF SEQUENCE {			
dl-CarrierFreq[n]	Same downlink EARFCN as used for Cell 23		Cell 1
	Same downlink EARFCN as used for Cell 1		Cell 23
cellReselectionPriority[n]	Not present		
}			
}			

Table 8.1.3.4.3.3-4: *RRCConnectionRelease* message (step 1, Table 8.1.3.4.3.2-1)

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 23		
}			
}			
}			
}			
}			

8.1.3.5 RRC connection release / Success / With priority information

8.1.3.5.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_IDLE state having received an RRCConnectionRelease message with the
freqPriorityListEUTRA with higher priority frequency}
ensure that {
  when { UE detects the cell re-selection criteria are met for the cell which belongs to the higher
priority frequency }
    then { UE reselects the cell which belongs to the higher priority frequency }
           }
```

8.1.3.5.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.8.3 and TS 36.304, clause 5.2.4.1, 5.2.4.2 and 5.2.4.5.

[TS 36.331, clause 5.3.8.3]

The UE shall:

1> delay the following actions defined in this sub-clause 60 ms from the moment the *RRCConnectionRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged, whichever is earlier;

1> if the *RRCConnectionRelease* message includes the *idleModeMobilityControlInfo*:

2> store the cell reselection priority information provided by the *idleModeMobilityControlInfo*;

2> if the *t320* is included:

3> start timer T320, with the timer value set according to the value of *t320*;

1> else:

...

1> if the *releaseCause* received in the *RRCConnectionRelease* message indicates '*loadBalancingTAURequired*':

2> perform the actions upon leaving RRC_CONNECTED as specified in 5.3.12, with release cause 'load balancing TAU required';

1> else:

2> perform the actions upon leaving RRC_CONNECTED as specified in 5.3.12, with release cause 'other';

[TS 36.304, clause 5.2.4.1]

Absolute priorities of different E-UTRAN frequencies or inter-RAT frequencies may be provided to the UE in the system information, in the *RRCConnectionRelease* message, or by inheriting from another RAT at inter-RAT cell (re)selection. In the case of system information, an E-UTRAN frequency or inter-RAT frequency may be listed without providing a priority (i.e. the field *cellReselectionPriority* is absent for that frequency). If priorities are provided in dedicated signalling, the UE shall ignore all the priorities provided in system information. If UE is in *camped on any cell* state, UE shall only apply the priorities provided by system information from current cell, and the UE preserves priorities provided by dedicated signalling unless specified otherwise. When the UE in *camped normally* state, has only dedicated priorities other than for the current frequency, the UE shall consider the current frequency to be the lowest priority frequency (i.e. lower than the eight network configured values). While the UE is camped on a suitable CSG cell, the UE shall always consider the current frequency to be the highest priority frequency (i.e. higher than the eight network configured values), irrespective of any other priority value allocated to this frequency. The UE shall delete priorities provided by dedicated signalling when:

- the UE enters RRC_CONNECTED state; or
- the optional validity time of dedicated priorities (T320) expires; or
- a PLMN selection is performed on request by NAS [5].

NOTE: Equal priorities between RATs are not supported.

The UE shall only perform cell reselection evaluation for E-UTRAN frequencies and inter-RAT frequencies that are given in system information and for which the UE has a priority provided.

The UE shall not consider any black listed cells as candidate for cell reselection.

The UE shall inherit the priorities provided by dedicated signalling and the remaining validity time (i.e., T320 in E-UTRA, T322 in UTRA and T3230 in GERAN), if configured, at inter-RAT cell (re)selection.

NOTE: The network may assign dedicated cell reselection priorities for frequencies not configured by system information.

[TS 36.304, clause 5.2.4.2]

When evaluating Srxlev and Squal of non-serving cells for reselection purposes, the UE shall use parameters provided by the serving cell.

Following rules are used by the UE to limit needed measurements:

- If the serving cell fulfils Srxlev > $S_{IntraSearchP}$ and Squal > $S_{IntraSearchQ}$, the UE may choose not to perform intra-frequency measurements.
- Otherwise, the UE shall perform intra-frequency measurements.
- The UE shall apply the following rules for E-UTRAN inter-frequencies and inter-RAT frequencies which are indicated in system information and for which the UE has priority provided as defined in 5.2.4.1:

- For an E-UTRAN inter-frequency or inter-RAT frequency with a reselection priority higher than the reselection priority of the current E-UTRA frequency the UE shall perform measurements of higher priority E-UTRAN inter-frequency or inter-RAT frequencies according to [10].

- For an E-UTRAN inter-frequency with an equal or lower reselection priority than the reselection priority of the current E-UTRA frequency and for inter-RAT frequency with lower reselection priority than the reselection priority of the current E-UTRAN frequency:

  - If the serving cell fulfils Srxlev > $S_{nonIntraSearchP}$ and Squal > $S_{nonIntraSearchQ}$, the UE may choose not to perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority.

  - Otherwise, the UE shall perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority according to [10].

[TS 36.304, clause 5.2.4.5]

If *threshServingLowQ* is provided in *SystemInformationBlockType3*, cell reselection to a cell on a higher priority E-UTRAN frequency or inter-RAT frequency than the serving frequency shall be performed if:

- A cell of a higher priority EUTRAN or UTRAN RAT/ frequency fulfils Squal > $Thresh_{X, HighQ}$ during a time interval $Treselection_{RAT}$; or

- A cell of a higher priority GERAN or CDMA2000 RAT/ frequency fulfils Srxlev > $Thresh_{X, HighP}$ during a time interval $Treselection_{RAT}$; and

- More than 1 second has elapsed since the UE camped on the current serving cell.

Otherwise, cell reselection to a cell on a higher priority E-UTRAN frequency or inter-RAT frequency than the serving frequency shall be performed if:

- A cell of a higher priority RAT/ frequency fulfils Srxlev > $Thresh_{X, HighP}$ during a time interval $Treselection_{RAT}$; and

More than 1 second has elapsed since the UE camped on the current serving cell.

Cell reselection to a cell on an equal priority E-UTRAN frequency shall be based on ranking for Intra-frequency cell reselection as defined in sub-clause 5.2.4.6.

If *threshServingLowQ* is provided in *SystemInformationBlockType3*, cell reselection to a cell on a lower priority E-UTRAN frequency or inter-RAT frequency than the serving frequency shall be performed if:

- The serving cell fulfils Squal < $Thresh_{Serving, LowQ}$ and a cell of a lower priority EUTRAN or UTRAN RAT/ frequency fulfils Squal > $Thresh_{X, LowQ}$ during a time interval $Treselection_{RAT}$; or

- The serving cell fulfils Squal < $Thresh_{Serving, LowQ}$ and a cell of a lower priority GERAN or CDMA2000 RAT/ frequency fulfils Srxlev > $Thresh_{X, LowP}$ during a time interval $Treselection_{RAT}$; and

- More than 1 second has elapsed since the UE camped on the current serving cell.

Otherwise, cell reselection to a cell on a lower priority E-UTRAN frequency or inter-RAT frequency than the serving frequency shall be performed if:

- The serving cell fulfils Srxlev < $Thresh_{Serving, LowP}$ and a cell of a lower priority RAT/ frequency fulfils Srxlev > $Thresh_{X, LowP}$ during a time interval $Treselection_{RAT}$; and

- More than 1 second has elapsed since the UE camped on the current serving cell.

Cell reselection to a higher priority RAT/ frequency shall take precedence over a lower priority RAT/ frequency, if multiple cells of different priorities fulfil the cell reselection criteria.

For cdma2000 RATs, Srxlev is equal to -FLOOR(-2 x 10 x log10 Ec/Io) in units of 0.5 dB, as defined in [18], with Ec/Io referring to the value measured from the evaluated cell.

For cdma2000 RATs, $Thresh_{X, HighP}$ and $Thresh_{X, LowP}$ are equal to -1 times the values signalled for the corresponding parameters in the system information.

In all the above criteria the value of $Treselection_{RAT}$ is scaled when the UE is in the medium or high mobility state as defined in subclause 5.2.4.3.1. If more than one cell meets the above criteria, the UE shall reselect a cell as follows:

- If the highest-priority frequency is an E-UTRAN frequency, a cell ranked as the best cell among the cells on the highest priority frequency(ies) meeting the criteria according to section 5.2.4.6;
- If the highest-priority frequency is from another RAT, a cell ranked as the best cell among the cells on the highest priority frequency(ies) meeting the criteria of that RAT.

8.1.3.5.3 Test description

8.1.3.5.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 3 and Cell6.
- System information combination 3 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

NOTE: For Cell 3 and 6 TAI is set to TAI-2

UE:

None.

Preamble:

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

8.1.3.5.3.2 Test procedure sequence

Table 8.1.3.5.3.2-1 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" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.1.3.5.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 3	Cell 6	Remark
T0	Cell-specific RS EPRE	dBm/ 15kHz	-85	"off"	"off"	The power level values are assigned to satisfy $SrxlevCell_1 > S_{intrasearch}$. (NOTE 1)
T1	Cell-specific RS EPRE	dBm/ 15kHz	-85	-73	-73	The power level values are assigned to satisfy both $Thresh_{x,low} < SrxlevCell_3$ and $Thresh_{x,high} < SrxlevCell_6$.
NOTE 1: Power level "Off" is defined in TS36.508 Table 6.2.2.1-1.						

Table 8.1.3.5.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionRelease* message including the *freqPriorityListEUTRA* on Cell 1.	<--	*RRCConnectionRelease*	-	-
2	Wait for 5 s for the UE to enter E-UTRA RRC_IDLE state on Cell 1.	-	-	-	-
3	The SS changes Cell 1, Cell 3 and Cell 6 level according to the row "T1" in table 8.1.3.5.3.2-1.	-	-	-	-
4	Void	-	-	-	-
5	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.7 indicate that the UE is camped on E-UTRAN Cell 6?	-	-	1	-

8.1.3.5.3.3 Specific message contents

Table 8.1.3.5.3.3-1: *RRCConnectionRelease* (step 1, Table 8.1.3.5.3.2-2)

Derivation Path: 36.508 Table 4.6.1-15			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRelease ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
rrcConnectionRelease-r8 SEQUENCE {			
idleModeMobilityControlInfo SEQUENCE {			
freqPriorityListEUTRA SEQUENCE (SIZE (1..maxFreq)) OF SEQUENCE {	3 entries		
carrierFreq[1]	Same downlink EARFCN as used for Cell 1		
cellReselectionPriority[1]	4		
carrierFreq[2]	Same downlink EARFCN as used for Cell 3		
cellReselectionPriority[2]	1		
carrierFreq[3]	Same downlink EARFCN as used for Cell 6		
cellReselectionPriority[3]	5		
}			
freqPriorityListGERAN	Not present		
freqPriorityListUTRA-FDD	Not present		
freqPriorityListUTRA-TDD	Not present		
bandClassPriorityListHRPD	Not present		
bandClassPriorityList1XRTT	Not present		
t320	Not present		
}			
}			
}			
}			
}			

Table 8.1.3.5.3.3-2: *SystemInformationBlockType5* for Cell 1 (preamble and all steps, Table 8.1.3.5.3.2-2)

Derivation path: 36.508 table 4.4.3.3-4			
Information Element	**Value/Remark**	**Comment**	**Condition**
SystemInformationBlockType5 ::= SEQUENCE {			
interFreqCarrierFreqList SEQUENCE (SIZE (1..maxFreq)) OF SEQUENCE {			
dl-CarrierFreq[n]	Same downlink EARFCN as used for Cell 3		
dl-CarrierFreq[m]	Same downlink EARFCN as used for Cell 6		
threshX-Low[n]	11		
threshX-High[m]	11		
}			
}			

Table 8.1.3.5.3.3-3: *SystemInformationBlockType5* for Cell 6 (all steps, Table 8.1.3.5.3.2-2)

Derivation path: 36.508 table 4.4.3.3-4			
Information Element	**Value/Remark**	**Comment**	**Condition**

SystemInformationBlockType5 ::= SEQUENCE {
interFreqCarrierFreqList SEQUENCE (SIZE (1..maxFreq)) OF SEQUENCE {
dl-CarrierFreq[1]
 	
dl-CarrierFreq[2]
 	
cellReselectionPriority[2]
}
}
	2 entries
	
	Same downlink EARFCN as used for Cell 1
	Same downlink EARFCN as used for Cell 3
	1		

8.1.3.6 RRC connection release / Redirection from E-UTRAN to UTRAN

8.1.3.6.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE receives an RRCConnectionRelease message including an IE redirectionInformation with
utra-CarrierFreq UTRA frequency }
   then { UE enters RRC_IDLE state on UTRA frequency included in IE redirectionInformation }
          }
```

8.1.3.6.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clause 5.3.8.3, 5.3.12 and TS 36.304, clause 5.2.7.

[TS 36.331, clause 5.3.8.3]

The UE shall:

1> delay the following actions defined in this sub-clause 60ms from the moment the *RRCConnectionRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged, whichever is earlier;

1> if the *RRCConnectionRelease* message includes the *idleModeMobilityControlInfo*:

…

1> else:

2> apply the cell reselection priority information broadcast in the system information;

1> if the *releaseCause* received in the *RRCConnectionRelease* message indicates '*loadBalancingTAURequired*':

…

1> else:

2> perform the actions upon leaving RRC_CONNECTED as specified in 5.3.12, with release cause 'other'.

[TS 36.331, clause 5.3.12]

Upon leaving RRC_CONNECTED, the UE shall:

…

1> indicate the release of the RRC connection to upper layers together with the release cause;

1> if leaving RRC_CONNECTED was not triggered by reception of the *MobilityFromEUTRACommand* message:

2> enter RRC_IDLE by performing cell selection in accordance with the cell selection process, defined for the case of leaving RRC_CONNECTED, as specified in TS 36.304 [4].

[TS 36.304, clause 5.2.7]

On transition from RRC_CONNECTED to RRC_IDLE, UE shall select a suitable cell to camp on according to *redirectedCarrierInfo*, if included in the *RRCConnectionRelease* message. Otherwise UE shall select a suitable cell on an EUTRA carrier.

...

8.1.3.6.3 Test description

8.1.3.6.3.1 Pre-test conditions

System Simulator:

- 2 cells, one E-UTRA and one UTRA cell and different location areas:
  - Cell 1 E-UTRA serving cell
  - Cell 5 suitable neighbour UTRA cell
  - The parameters settings and power levels for Cell 1 and Cell 5 are selected according to [18], [5] and Table 8.1.3.6.3.2-0 so that camping on Cell 1 is guaranteed and no cell re-selection to Cell 5 can take place (utra priority is lower than serving and $S_{Cell\,1} > Thresh_{Cell\,1,low}$).
  - 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].

8.1.3.6.3.2 Test procedure sequence

Table 8.1.3.6.3.2-0 shows the cell power levels after the preamble.

Table 8.1.3.6.3.2-0: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 5	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-75	-	The power levels are such that camping on Cell 1 is guaranteed.
	CPICH_Ec	dBm/3.84 MHz	-	-70	
	P-CCPCH	dBm/1.28 MHz	-	-72	

Table 8.1.3.6.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionRelease* message (IE *redirectionInfomation* including *UTRA-CarrierFreq of Cell 5*).	<--	*RRCConnectionRelease*	-	-
2	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.8 indicate that the UE is camped on UTRAN Cell 5?	-	-	1	-

8.1.3.6.3.3 Specific message or IE contents

Table 8.1.3.6.3.3-1: *Void*

Table 8.1.3.6.3.3-2: *Void*

Table 8.1.3.6.3.3-3: *SystemInformationBlockType6* for cell 1 (preamble and all steps, Table 8.1.3.6.3.2-1)

Derivation Path: 36.508 table 4.4.3.3-5			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType6 ::= SEQUENCE {			
carrierFreqListUTRA-FDD SEQUENCE (SIZE (1..maxUTRA-FDD-Carrier)) OF SEQUENCE {			UTRA-FDD
carrierFreq[n]	Same downlink UARFCN as used for cell 5		
cellReselectionPriority[n]	3	Lower priority than E-UTRA	
}			
carrierFreqListUTRA-TDD SEQUENCE (SIZE (1..maxUTRA-TDD-Carrier)) OF SEQUENCE {			UTRA-TDD
carrierFreq[n]	Same downlink UARFCN as used for cell 5		
cellReselectionPriority[n]	3	Lower priority than E-UTRA	
}			
}			

Condition	Explanation
UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

Table 8.1.3.6.3.3-4 *RRCConnectionRelease* message (step 1, Table 8.1.3.6.3.2-1)

Derivation Path: 36.508 table 4.6.1.1-15			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRelease ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
rrcConnectionRelease-r8 SEQUENCE {			
redirectedCarrierInfo ::= CHOICE {			
utra-FDD	Downlink UARFCN of cell 5		UTRA-FDD
utra-TDD	Downlink UARFCN of cell 5		UTRA-TDD
}			
}			
}			

Condition	Explanation
UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

Table 8.1.3.6.3.3-5: System Information Block type 19 for Cell 5 (preamble and all steps, Table 8.1.3.6.3.2-1)

Derivation Path: 36.508 table 4.4.4.1-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SysInfoType19 ::= SEQUENCE {			
Utra-PriorityInfoList ::= SEQUENCE {			
utra-ServingCell ::= SEQUENCE {			
priority	5		
}			
}			

8.1.3.6a RRC connection release / Redirection from E-UTRAN to UTRAN / Pre-redirection info

8.1.3.6a.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE receives an RRCConnectionRelease message including an IE redirectedCarrierInfo with
utra-CarrierFreq UTRA frequency }
   then { UE sends an RRC CONNECTION REQUEST message including IE Pre-redirection info set to FALSE
on UTRA frequency included in IE redirectionInformation and enters RRC_IDLE state on that UTRA
frequency }
           }
```

8.1.3.6a.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clause 5.3.8.3, 5.3.12 and TS 36.304, clause 5.2.7 and TS 25.331, clause 8.1.3.3, 10.2.39 with additional clarification in R2-105061.

[TS 36.331, clause 5.3.8.3]

The UE shall:

1> delay the following actions defined in this sub-clause 60ms from the moment the *RRCConnectionRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged, whichever is earlier;

1> if the *RRCConnectionRelease* message includes the *idleModeMobilityControlInfo*:

…

1> else:

2> apply the cell reselection priority information broadcast in the system information;

1> if the *releaseCause* received in the *RRCConnectionRelease* message indicates '*loadBalancingTAURequired*':

…

1> else:

2> perform the actions upon leaving RRC_CONNECTED as specified in 5.3.12, with release cause 'other'.

[TS 36.331, clause 5.3.12]

Upon leaving RRC_CONNECTED, the UE shall:

…

1> indicate the release of the RRC connection to upper layers together with the release cause;

1> if leaving RRC_CONNECTED was not triggered by reception of the *MobilityFromEUTRACommand* message:

2> enter RRC_IDLE by performing cell selection in accordance with the cell selection process, defined for the case of leaving RRC_CONNECTED, as specified in TS 36.304 [4].

[TS 36.304, clause 5.2.7]

On transition from RRC_CONNECTED to RRC_IDLE, UE shall select a suitable cell to camp on according to *redirectedCarrierInfo*, if included in the *RRCConnectionRelease* message. Otherwise UE shall select a suitable cell on an EUTRA carrier.

[TS 25.331, clause 8.1.3.3]

...

1> if the UE supports E-UTRA:

2> if the UE is attempting to establish the signalling connection as a result of being redirected by E-UTRA; and

2> if this is the first attempt to establish the signalling connection;

3> do not include the IE "Pre-Redirection info";

[TS 25.331, clause 10.2.39]

Pre-redirection info	OP		Pre-redirection info 10.3.3.25a	The presence of this IE indicates the UE support of radio access technologies that the UE could be directed to, and that the UE was not redirected from EUTRA.	REL-8

8.1.3.6a.3 Test description

8.1.3.6a.3.1 Pre-test conditions

System Simulator:

- 2 cells, one E-UTRA and one UTRA cell and different location areas:
  - Cell 1 E-UTRA serving cell
  - Cell 5 suitable neighbour UTRA cell
  - The parameters settings and power levels for Cell 1 and Cell 5 are selected according to [18], [5] and Table 8.1.3.6a.3.2-0 so that camping on Cell 1 is guaranteed and no cell re-selection to Cell 5 can take place (utra priority is lower than serving and $S_{Cell\,1} > Thresh_{Cell\,1,low}$).
  - 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].

8.1.3.6a.3.2 Test procedure sequence

Table 8.1.3.6a.3.2-0 shows the cell power levels after the preamble.

Table 8.1.3.6a.3.2-0: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 5	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-75	-	The power levels are such that camping on Cell 1 is guaranteed.
	CPICH_Ec	dBm/3.84 MHz	-	-70	
	P-CCPCH	dBm/1.28 MHz	-	-72	

Table 8.1.3.6a.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionRelease* message (IE *redirectedCarrierInfo* including *UTRA-CarrierFreq of Cell 5*).	<--	*RRCConnectionRelease*	-	-
2	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.8 indicate that the UE is camped on UTRAN Cell 5?	-	-	1	-

8.1.3.6a.3.3 Specific message or IE contents

Table 8.1.3.6a.3.3-1: *SystemInformationBlockType6* for cell 1 (preamble and all steps, Table 8.1.3.6a.3.2-1)

Derivation Path: 36.508 table 4.4.3.3-5			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType6 ::= SEQUENCE {			
carrierFreqListUTRA-FDD SEQUENCE (SIZE (1..maxUTRA-FDD-Carrier)) OF SEQUENCE {			UTRA-FDD
carrierFreq[n]	Same downlink UARFCN as used for cell 5		
cellReselectionPriority[n]	3	Lower priority than E-UTRA	
}			
carrierFreqListUTRA-TDD SEQUENCE (SIZE (1..maxUTRA-TDD-Carrier)) OF SEQUENCE {			UTRA-TDD
carrierFreq[n]	Same downlink UARFCN as used for cell 5		
cellReselectionPriority[n]	3	Lower priority than E-UTRA	
}			
}			

Condition	Explanation
UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

Table 8.1.3.6a.3.3-2 *RRCConnectionRelease* message (step 1, Table 8.1.3.6a.3.2-1)

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 {			
utra-FDD	Downlink UARFCN of cell 5		UTRA-FDD
utra-TDD	Downlink UARFCN of cell 5		UTRA-TDD
}			
nonCriticalExtension SEQUENCE {			
nonCriticalExtension SEQUENCE {			
cellInfoList-r9 ::= CHOICE {}	Not present	redirection with SIB is optional	
}			
}			
}			
}			
}			
}			

Condition	Explanation
UTRA-FDD	UTRA FDD cell environment
UTRA-TDD	UTRA TDD cell environment

Table 8.1.3.6a.3.3-3: System Information Block type 19 for Cell 5 (preamble and all steps, Table 8.1.3.6a.3.2-1)

Derivation Path: 36.508 table 4.4.4.1-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SysInfoType19 ::= SEQUENCE {			
Utra-PriorityInfoList ::= SEQUENCE {			
utra-ServingCell ::= SEQUENCE {			
priority	5		
}			
}			

Table 8.1.3.6a.3.3-4 RRC CONNECTION REQUEST (step 2, Table 8.1.3.6a.3.2-1)

Derivation Path: 36.508 table 4.7B.1-7			
Information Element	**Value/remark**	**Comment**	**Condition**
Pre-redirection info	Not present	The presence of this IE indicates the UE support of radio access technologies that the UE could be directed to, and that the UE was not redirected from EUTRA	

8.1.3.7 RRC connection release / Redirection from UTRAN to E-UTRAN

8.1.3.7.1 Test Purpose (TP)

(1)

with { UE in UTRA Idle state }

```
ensure that {
  when { UE is requested to make an outgoing PS call }
   then { UE includes in the RRC CONNECTION REQUEST the IE Pre-Redirection info" }
            }
```

(2)

```
with { UE in UTRA CELL_DCH state }
ensure that {
  when { UE receives an RRC CONNECTION RELEASE message including an IE Redirection info with E-UTRA
target info E-UTRA frequency }
   then { UE enters RRC_IDLE state on E-UTRAN Carrier included in IE Redirection info }
            }
```

8.1.3.7.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 25.331, clause 8.1.3.3, 8.1.4.3 and clause 8.5.2.

[TS 25.331, clause 8.1.3.3]

The UE shall, in the transmitted RRC CONNECTION REQUEST message:

…

1> if the UE supports E-UTRA:

2> if the variable EUTRA_FREQUENCY_INFO_LIST contains no E-UTRA frequencies;

3> include the IE "Pre-Redirection info";

3> if the UE supports E-UTRA FDD:

4> set the IE "Support of E-UTRA FDD" to TRUE.

3> if the UE supports E-UTRA TDD:

4> set the IE "Support of E-UTRA TDD" to TRUE.

2> if the UE supports any of the bands that the E-UTRA frequencies included in the variable EUTRA_FREQUENCY_INFO_LIST belong to;

3> include the IE "Pre-Redirection info";

3> if the UE supports any of the bands that the E-UTRA FDD frequencies included in the variable EUTRA_FREQUENCY_INFO_LIST belong to:

4> set the IE "Support of E-UTRA FDD" to TRUE.

3> if the UE supports any of the bands that the E-UTRA TDD frequencies included in the variable EUTRA_FREQUENCY_INFO_LIST belong to:

4> set the IE "Support of E-UTRA TDD" to TRUE.

[TS 25.331, clause 8.1.4.3]

The UE shall receive and act on an RRC CONNECTION RELEASE message in states CELL_DCH and CELL_FACH and CELL_PCH (FDD only). Furthermore this procedure can interrupt any ongoing procedures with the UE in the above listed states.

When the UE receives the first RRC CONNECTION RELEASE message; and

1> if the message is received on the CCCH, and IE "U-RNTI" is present and has the same value as the variable U_RNTI; or

1> if the message is received on DCCH:

the UE shall perform the RRC connection release procedure as specified below.

When the UE receives the first RRC CONNECTION RELEASE message; and

1> if the message is received on the CCCH, the IE "UTRAN group identity" is present and there is a group identity match according to subclause 8.6.3.13:

the UE shall perform the RRC connection release procedure as specified below.

The UE shall:

1> in state CELL_DCH:

2> initialise the counter V308 to zero;

2> set the IE "RRC transaction identifier" in the RRC CONNECTION RELEASE COMPLETE message to the value of "RRC transaction identifier" in the entry for the RRC CONNECTION RELEASE message in the table "Accepted transactions" in the variable TRANSACTIONS;

2> submit an RRC CONNECTION RELEASE COMPLETE message to the lower layers for transmission using UM RLC on the DCCH to the UTRAN;

2> if the IE "Rplmn information" is present:

3> the UE may:

4> store the IE on the ME together with the PLMN id for which it applies;

3> the UE may then:

4> utilise this information, typically indicating where a number of BCCH frequency ranges of a RAT may be expected to be found, during subsequent Rplmn selections of the indicated PLMN.

2> if the IE "UE Mobility State Indicator" is present:

3> consider the High-mobility state to have being detected when entering idle mode.

2> start timer T308 when the RRC CONNECTION RELEASE COMPLETE message is sent on the radio interface.

1> in state CELL_FACH:

2> if the RRC CONNECTION RELEASE message was received on the DCCH:

3> set the IE "RRC transaction identifier" in the RRC CONNECTION RELEASE COMPLETE message to the value of "RRC transaction identifier" in the entry for the RRC CONNECTION RELEASE message in the table "Accepted transactions" in the variable TRANSACTIONS;

3> submit an RRC CONNECTION RELEASE COMPLETE message to the lower layers for transmission using AM RLC on the DCCH to the UTRAN.

3> when the successful transmission of the RRC CONNECTION RELEASE COMPLETE message has been confirmed by the lower layers:

4> release all its radio resources; and

4> indicate the release of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to upper layers; and

4> clear any entry for the RRC CONNECTION RELEASE message in the tables "Accepted transactions" and "Rejected transactions" in the variable TRANSACTIONS;

4> clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;

4> clear the variable ESTABLISHED_RABS;

4> pass the value of the IE "Release cause" received in the RRC CONNECTION RELEASE message to upper layers;

4> enter idle mode;

4> perform the actions specified in subclause 8.5.2 when entering idle mode.

3> and the procedure ends.

2> if the RRC CONNECTION RELEASE message was received on the CCCH:

3> release all its radio resources;

3> indicate the release of the established signalling connections (as stored in the variable ESTABLISHED_SIGNALLING_CONNECTIONS) and established radio access bearers (as stored in the variable ESTABLISHED_RABS) to the upper layers;

3> clear any entry for the RRC CONNECTION RELEASE message in the tables "Accepted transactions" and "Rejected transactions" in the variable TRANSACTIONS;

3> clear the variable ESTABLISHED_SIGNALLING_CONNECTIONS;

3> clear the variable ESTABLISHED_RABS;

3> pass the value of the IE "Release cause" received in the RRC CONNECTION RELEASE message to upper layers;

3> enter idle mode;

3> perform the actions specified in subclause 8.5.2 when entering idle mode;

3> and the procedure ends.

[TS 25.331, clause 8.5.2]

When entering idle mode from connected mode, the UE shall:

1> clear or set variables upon leaving UTRA RRC connected mode as specified in subclause 13.4;

1> if the RRC CONNECTION RELEASE message was received and the IE "Redirection info" was present therein:

2> if the IE "Frequency info" is present, attempt to camp on a suitable cell on the indicated UTRA carrier included in the RRC CONNECTION RELEASE message;

2> if the IE "GSM target cell info" is present, attempt to camp on a suitable cell of the list of cells for the indicated RAT included in the RRC CONNECTION RELEASE message. If no cells were indicated for that RAT or no suitable cell of the indicated cells for that RAT is found within 10s, attempt to camp on any suitable cell of that RAT; or

2> if the IE "E-UTRA target info" is present, attempt to camp on any of the frequencies for the indicated RAT included in the RRC CONNECTION RELEASE message, excluding any cell indicated in the list of not allowed cells for that RAT, if present. If no suitable cell on the indicated frequencies for that RAT is found within 10s, attempt to camp on any suitable cell of that RAT, excluding any cell indicated in the list of not allowed cells for that RAT; or

2> if no suitable cell is found on the indicated UTRA carrier or RAT camp on any suitable cell.

8.1.3.7.3 Test description

8.1.3.7.3.1 Pre-test conditions

System Simulator:

- 2 cells, one UTRA and one E-UTRA cell:
  - Cell 5 UTRA serving cell (priority 4 default)
  - Cell 1 suitable neighbour E-UTRA cell (priority 3)
  - System information combination 4 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

UTRAN Idle state

Preamble:

State 3 or state 7 as specified in clause 7.4 of TS 34.108, depending on the CN domain(s) supported by the UE.

8.1.3.7.3.2 Test procedure sequence

Table 8.1.3.7.3.2-0 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Subsequent configurations marked "T1" is applied at the point indicated in the Main behaviour description in Table 8.1.3.7.3.2-1.

Table 8.1.3.7.3.2-0: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 5	Remark
T1	Cell-specific RS EPRE	dBm/15kHz	-70	-	The power level values are such that entering condition for event 3c is satisfied.
	CPICH Ec (UTRA FDD)	dBm/3.84 MHz	-	-85	
	PCCPCH Ec (UTRA LCR TDD)	dBm/1.28 MHz	-	-85	

Table 8.1.3.7.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Make the UE initiate an outgoing PS call.	-	-	-	-
2	Check: Does the UE include the IE Pre-redirection info with Support of E-UTRA set to TRUE?	-->	RRC CONNECTION REQUEST	1	P
3	The SS transmits a RRC CONNECTION SETUP on SRB1 on Cell 5.	<--	RRC CONNECTION SETUP	-	-
4	The UE transmits an RRC CONNECTION SETUP COMPLETE message	-->	RRC CONNECTION SETUP COMPLETE	-	-
5	The UE transmits the SERVICE REQUEST message for PS data call	-->	INITIAL DIRECT TRANSFER	-	-
-	EXCEPTION: Steps 6a1 and 6a2 describe behaviour that depends on the UE capability; the "lower case letter" identifies a step sequence that takes place if a capability is supported. UTRAN FDD: IF pc_UTRA_CompressedModeRequired and pc_UTRA_FeatrGrp_2 THEN Steps 6a1, 6a2 UTRAN TDD: go to step 6Aa1				
6a1	The SS transmits a PHYSICAL CHANNEL RECONFIGURATION message on Cell 5 including the DPCH compressed mode info.	<--	PHYSICAL CHANNEL RECONFIGURATION	-	-
6a2	The UE transmits a PHYSICAL CHANNEL RECONFIGURATION COMPLETE message on Cell 5.	-->	PHYSICAL CHANNEL RECONFIGURATION COMPLETE	-	-
-	EXCEPTION: Steps 6Aa1 and 6Aa2 describe behaviour that depends on the UE capability; the "lower case letter" identifies a step sequence that takes place if a capability is supported. IF pc_UTRA_FeatrGrp_2 THEN 6Aa1 to 6Aa2.				
6Aa1	The SS configures the Inter-RAT measurement with E-UTRA frequency list including the DL Carrier frequency of Cell 1	<--	MEASUREMENT CONTROL	-	-
6Aa2	The SS changes Cell 1 and Cell 5 power level according to the row "T1" in table 8.1.3.7.3.2-0. Note: The UE starts sending MEASUREMENT REPORT messages during the Authentication Phase	-	-	-	-
7-9	Void				
10	The SS starts the Authentication and Ciphering Request procedure	<--	DOWNLINK DIRECT TRANSFER	-	-
11	The UE transmits the Authentication and Ciphering Response	-->	UPLINK DIRECT TRANSFER	-	-
12	The SS transmits a EXCEPTION: Step 13A and Step 14a can occur in any order. SECURITY MODE COMMAND message	<--	SECURITY MODE COMMAND	-	-
13	The UE transmits a SECURITY MODE COMPLETE message	-->	SECURITY MODE COMPLETE	-	-
13A	The UE transmits an ACTIVATE PDP CONTEXT REQUEST message NOTE: Retransmission of this message is ignored	-->	UPLINK DIRECT TRANSFER		
-	EXCEPTION: Step 14a describes behaviour that depends on the UE capability; the "lower case letter" identifies a step sequence that takes place if a capability is supported.				
14 a	IF pc_UTRA_FeatrGrp_2 THEN if MEASUREMENT REPORT is received during the authentication and security phase (from	-->	MEASUREMENT REPORT	-	-

	step 7 to 13) goto next step otherwise the SS waits for MEASUREMENT REPORT message.				
15	The SS transmits an RRC CONNECTION RELEASE message (IE E-UTRA target info including DL Carrier frequency of Cell 1).	<--	RRC CONNECTION RELEASE	-	-
16	The UE transmits a RRC CONNECTION RELEASE COMPLETE message	-->	RRC CONNECTION RELEASE COMPLETE	-	-
17	The UE transmits a RRC CONNECTION RELEASE COMPLETE message	-->	RRC CONNECTION RELEASE COMPLETE	-	-
18	Check: Does the test result of generic test procedure in TS 36.508 Table 6.4.2.7A-2 indicate that the UE is camped on E-UTRAN Cell 1?	-	-	2	-
NOTE: pc_FeatrGrp_2 is always set to TRUE when pc_UTRA_CompressedModeRequired is TRUE					

8.1.3.7.3.3 Specific message or IE contents

Table 8.1.3.7.3.3-1 System Information Block type 19 for Cell 5 (preamble and all steps, Table 8.1.3.7.3.2-1)

Derivation Path: 36.508 table Table 4.4.4.1-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SysInfoType19 ::= SEQUENCE {			
utra-PriorityInfoList SEQUENCE {			
utra-ServingCell SEQUENCE {			
priority	4		
}			
eutra-FrequencyAndPriorityInfoList SEQUENCE (SIZE (1..maxNumEUTRAFreqs)) OF SEQUENCE	1 entry		
earfcn[*1*]	Downlink EARFCN of Cell 1		
priority[*1*]	3		
}			
}			

Table 8.1.3.7.3.3-2: RRC CONNECTION REQUEST (step 2, Table 8.1.3.7.3.2-1)

Derivation path: 34.108 default RRC CONNECTION REQUEST in section 9.1.1 for UTRA FDD or 9.1.2 for UTRA TDD			
Information Element	**Value/Remark**	**Comment**	**Condition**
Pre-redirection info		The presence of this IE indicates the UE support of radio access technologies that the UE could be directed to	
Support of E-UTRA FDD	TRUE		E-UTRA-FDD
Support of E-UTRA TDD	TRUE		E-UTRA-TDD

Table 8.1.3.7.3.3-3: MEASUREMENT CONTROL (step 6Aa1, Table 8.1.3.7.3.2-1)

Derivation Path: 36.508, clause 4.7B.1 Table 4.7B.1-3			
Information Element	**Value/remark**	**Comment**	**Condition**
CHOICE Measurement type	Inter-RAT measurement		
CHOICE report criteria	Inter-RAT measurement reporting criteria		
Parameters required for each event	1 entry		
Inter-RAT event identity	3c		
Threshold own system	Not present		
W	Not present		
DPCH Compressed mode status info			UTRA CM-

			Support
TGPS reconfiguration CFN	(Current CFN + (256 – TTI/10msec))mod 256		
Transmission gap pattern sequence	1 entry		
TGSPI	1		
TGPS Status Flag	activate		
TGCFN	(Current CFN + (256 – TTI/10msec))mod 256		
DPCH Compressed mode status info	Not Present		UTRA CM-Not Supported

Condition	Explanation
UTRA CM-Supported	UTRAN Compressed Mode configuration supported
UTRA CM-Not Supported	UTRAN Compressed Mode configuration not supported

Table 8.1.3.7.3.3-4: RRC CONNECTION RELEASE (step 15, Table 8.1.3.7.3.2-1)

Derivation path: 34.108 default RRC CONNECTION RELEASE in section 9.1.1 for UTRA FDD or 9.1.2 for UTRA TDD			
Information Element	**Value/Remark**	**Comment**	**Condition**
N308	1		
Redirection info			
Frequency info	Omitted		
Inter-RAT info	E-UTRA		
E-UTRA target info			
E-UTRA Target Frequency Info List	1 Entry		
FDD			E-UTRA-FDD
DL Carrier frequency	The DL Carrier frequency of Cell 1		
Blacklisted cells per freq list	Omitted		
TDD			E-UTRA-TDD
DL Carrier frequency	The DL Carrier frequency of Cell 1		
Blacklisted cells per freq list	Omitted		

Table 8.1.3.7.3.3-5: PHYSICAL CHANNEL RECONFIGURATION (step 6a1, Table 8.1.3.7.3.2-1)

Derivation path: 36.508, clause 4.7B.1 Table 4.7B.1-5			
Information Element	**Value/Remark**	**Comment**	**Condition**
CHOICE UL/DL Mode	UL and DL, UL only or DL only (depending on the UE capability)		
Downlink compressed mode method	SF_2(or not sent, depending on the UE capability)		
Uplink compressed mode method	SF_2(or not sent, depending on the UE capability)		

8.1.3.8 RRC connection release / Redirection from E-UTRAN to GERAN

8.1.3.8.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE receives an RRCConnectionRelease message including an IE redirectedCarrierInfo set to
geran }
   then { UE enters Idle mode on GERAN Cell included in IE redirectedCarrierInfo  }
          }
```

8.1.3.8.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clause 5.3.8.3, 5.3.12 and TS 36.304, clause 5.2.7.

[TS 36.331, clause 5.3.8.3]

The UE shall:

1> delay the following actions defined in this sub-clause 60ms from the moment the *RRCConnectionRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged, whichever is earlier;

1> if the *RRCConnectionRelease* message includes the *idleModeMobilityControlInfo*:

…

1> else:

2> apply the cell reselection priority information broadcast in the system information;

1> if the *releaseCause* received in the *RRCConnectionRelease* message indicates '*loadBalancingTAURequired*':

…

1> else:

2> perform the actions upon leaving RRC_CONNECTED as specified in 5.3.12, with release cause 'other'.

[TS 36.331, clause 5.3.12]

Upon leaving RRC_CONNECTED, the UE shall:

…

1> indicate the release of the RRC connection to upper layers together with the release cause;

1> if leaving RRC_CONNECTED was not triggered by reception of the *MobilityFromEUTRACommand* message:

2> enter RRC_IDLE by performing cell selection in accordance with the cell selection process, defined for the case of leaving RRC_CONNECTED, as specified in TS 36.304 [4].

[TS 36.304, clause 5.2.7]

On transition from RRC_CONNECTED to RRC_IDLE, a UE shall attempt to camp on the last cell for which it was in RRC_CONNECTED or any cell on a frequency or frequency of RAT assigned by RRC in the state transition message.

...

8.1.3.8.3 Test description

8.1.3.8.3.1 Pre-test conditions

System Simulator:

- 2 cells, one E-UTRA and one GERAN cell and different location areas:
  - Cell 1 E-UTRA serving cell (priority 4 default)
  - Cell 24 GERAN neighbouring cell (priority 3)
  - The parameters settings and power levels for Cell 1 and Cell 24 are selected according to [18], [5], [25] and Table 8.1.3.8.3.2-0 so that camping on Cell 1 is guaranteed and no cell re-selection to Cell 24 can take place (GERAN priority is lower than serving and $S_{Cell\,1} > Thresh_{Cell\,1,Low}$)
  - 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].

8.1.3.8.3.2 Test procedure sequence

Table 8.1.3.6.3.2-0 shows the cell power levels after the preamble.

Table 8.1.3.8.3.2-0: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 24	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-75	-	The power levels are such that camping on Cell 1 is guaranteed.
	GERAN Cell Power	dBm	-	-70	
T1	Cell-specific RS EPRE	dBm/15kHz	-115	-	The power levels are such that reselection back to cell 1 should not occur
	GERAN Cell Power	dBm		-70	

Table 8.1.3.8.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionRelease* message (IE *redirectedCarrierInfo* including *startingARFCN* of Cell 24).	<--	*RRCConnectionRelease*	-	-
1A	The UE sends a CHANNEL REQUEST message on the cell 24	-->	CHANNEL REQUEST	-	-
1B	An uplink TBF is established in order to allow the UE to transmit a ROUTING AREA UPDATE REQUEST message signalling.	-	-	-	-
1C	The UE transmits a ROUTING AREA UPDATE REQUEST message.	-->	ROUTING AREA UPDATING REQUEST	-	-
1D	The SS changes cell 1 level according to the row “T1” in table 8.1.3.8.3.2-0				
2	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.9 steps 4-11 indicate that the UE is camped on GERAN Cell 24? NOTE: The UE completes the RAU procedure.	-	-	1	-

8.1.3.8.3.3 Specific message or IE contents

Table 8.1.3.8.3.3-1: *Void*

Table 8.1.3.8.3.3-2: *SystemInformationBlockType7* for cell 1 (preamble and all steps, Table 8.1.3.8.3.2-1)

Derivation Path: 36.508 table 4.4.3.3-6			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType7 ::= SEQUENCE {			
carrierFreqsInfoList SEQUENCE (SIZE (1..maxGNFG)) OF SEQUENCE {			
carrierFreqs SEQUENCE [n] {			
startingARFCN	Same as cell 24		
bandIndicator	Same as cell 24		
followingARFCNs CHOICE {			
equallySpacedARFCNs SEQUENCE {			
arfcn-Spacing	Same as cell 24		
numberOfFollowingARFCNs	Same as cell 24		
}			
}			
}			
commonInfo SEQUENCE {			
cellReselectionPriority	3		
}			
}			
}			

Table 8.1.3.8.3.3-3: *RRCConnectionRelease* message (step 1, Table 8.1.3.8.3.2-1)

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 {			
geran SEQUENCE {			
startingARFCN	Downlink ARFCN of Cell 24		
bandIndicator	The same band indicator of the Cell 24		
followingARFCNs CHOICE {			
explicitListOfARFCNs	0 Entries		
}			
}			
}			
}			
}			
}			
}			

8.1.3.9 RRC connection release / Redirection from E-UTRAN to CDMA2000-HRPD

8.1.3.9.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE receives an RRCConnectionRelease message including an IE redirectedCarrierInfo set to
cdma2000-HRPD }
   then { UE enters cdma2000-HRPD mode }
          }
```

8.1.3.9.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clause 5.3.8.3, 5.3.12 and TS 36.304, clause 5.2.7.

[TS 36.331, clause 5.3.8.3]

The UE shall:

1> delay the following actions defined in this sub-clause 60ms from the moment the *RRCConnectionRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged, whichever is earlier;

1> if the *RRCConnectionRelease* message includes the *idleModeMobilityControlInfo*:

…

1> else:

2> use the idle mobility parameters broadcast in the system information;

1> if the *releaseCause* received in the *RRCConnectionRelease* message indicates '*loadBalancingTAURequired*':

…

1> else:

2> perform the actions upon leaving RRC_CONNECTED as specified in 5.3.12, with release cause 'other'.

[TS 36.331, clause 5.3.12]

Upon leaving RRC_CONNECTED, the UE shall:

…

1> indicate the release of the RRC connection to upper layers together with the release cause;

1> if leaving RRC_CONNECTED was not triggered by reception of the *MobilityFromEUTRACommand* message:

2> enter RRC_IDLE by performing cell selection in accordance with the cell selection process, defined for the case of leaving RRC_CONNECTED, as specified in TS 36.304 [4].

[TS 36.304, clause 5.2.7]

On transition from RRC_CONNECTED to RRC_IDLE, a UE shall attempt to camp on the last cell for which it was in RRC_CONNECTED or any cell on a frequency or frequency of RAT assigned by RRC in the state transition message.

...

8.1.3.9.3 Test description

8.1.3.9.3.1 Pre-test conditions

System Simulator:

- 2 cells, one E-UTRA and one HRPD cell:
  - Cell 1 E-UTRA serving cell
  - Cell 15 suitable neighbour HRPD cell
  - The parameters settings and power levels for Cell 1 and Cell 15 are selected according to [18], [xx] and Table 8.1.3.9.3.2-1 so that camping on Cell 1 is guaranteed and no cell re-selection to Cell 15 can take place (hrpd priority is lower than serving and $S_{Cell\,1} > Thresh_{Cell\,1,low}$).
  - 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].

Note: UE is not pre-registered in Cell 15.

8.1.3.9.3.2 Test procedure sequence

Table 8.1.3.9.3.2-1 shows the cell power levels after the preamble.

Table 8.1.3.9.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 15	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-75	-	The power levels are such that camping on Cell 1 is guaranteed.
	Îor/Ioc	dB	-	-5	
	Ioc	dBm/1.23 MHz	-	-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 8.1.3.9.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionRelease* message (IE redirectedCarrierInfo including cdma2000-HRPD of Cell 15).	<--	*RRCConnectionRelease*	-	-
2	Check: Does the UE transmit an Access Probe on Cell 15 to initiate registration?	-->	*Access Probe*	1	P

8.1.3.9.3.3 Specific message or IE contents

Table 8.1.3.9.3.3-1: *Void*

Table 8.1.3.9.3.3-2: RRCConnectionRelease (step 1, Table 8.1.3.9.3.2-2)

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 {			
cdma2000-HRPD	cdma2000-CarrierInfo for Cell 15		
}			
}			
}			
}			
}			

8.1.3.10 RRC connection release / Redirection from E-UTRAN to CDMA2000-1xRTT

8.1.3.10.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE receives an RRCConnectionRelease message including an IE redirectedCarrierInfo set to
cdma2000-1xRTT }
   then { UE enters cdma2000-1xRTT mode }
```

}

8.1.3.10.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clause 5.3.8.3, 5.3.12 and TS 36.304, clause 5.2.7.

[TS 36.331, clause 5.3.8.3]

The UE shall:

1> delay the following actions defined in this sub-clause 60ms from the moment the *RRCConnectionRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged, whichever is earlier;

1> if the *RRCConnectionRelease* message includes the *idleModeMobilityControlInfo*:

…

1> else:

2> apply the cell reselection priority information broadcast in the system information;

1> if the *releaseCause* received in the *RRCConnectionRelease* message indicates '*loadBalancingTAURequired*':

…

1> else:

2> perform the actions upon leaving RRC_CONNECTED as specified in 5.3.12, with release cause 'other'.

[TS 36.331, clause 5.3.12]

Upon leaving RRC_CONNECTED, the UE shall:

…

1> indicate the release of the RRC connection to upper layers together with the release cause;

1> if leaving RRC_CONNECTED was not triggered by reception of the *MobilityFromEUTRACommand* message:

2> enter RRC_IDLE by performing cell selection in accordance with the cell selection process, defined for the case of leaving RRC_CONNECTED, as specified in TS 36.304 [4].

[TS 36.304, clause 5.2.7]

On transition from RRC_CONNECTED to RRC_IDLE, a UE shall attempt to camp on the last cell for which it was in RRC_CONNECTED or any cell on a frequency or frequency of RAT assigned by RRC in the state transition message.

...

8.1.3.10.3 Test description

8.1.3.10.3.1 Pre-test conditions

System Simulator:

- 2 cells, one E-UTRA and one 1xRTT cell:
  - Cell 1 E-UTRA serving cell
  - Cell 19 suitable neighbour 1xRTT cell
  - The parameters settings and power levels for Cell 1 and Cell 19 are selected according to [18] and Table 8.1.3.10.3.2-1 so that camping on Cell 1 is guaranteed and no cell re-selection to Cell 19 can take place (1xRTT priority is lower than serving and $S_{Cell\ 1} > Thresh_{Cell\ 1,low}$).
  - System information combination 6 as defined in TS 36.508 [18] clause 4.4.3.1 is used in E-UTRA cells.

UE:

- UE is not pre-registered in Cell 19.

Preamble:

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

8.1.3.10.3.2 Test procedure sequence

Table 8.1.3.10.3.2-1 shows the cell power levels after the preamble.

Table 8.1.3.10.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 19	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-75	-	The power levels are such that camping on Cell 1 is guaranteed.
	Ior/Ioc	dB	-	0	
	Pilot Ec/ Ior	dB	-	-7	
	Ioc	dBm/1.23 MHz	-	-75	
	CPICH_Ec/Io (Note 1)	dB	-	-10	
Note 1: This parameter is not directly settable, but is derived by calculation from the other parameters set by the SS.					

Table 8.1.3.10.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionRelease* message.	<--	*RRCConnectionRelease*	-	-
2	Check: Does the UE transmit an Access Probe on Cell 19 to initiate registration?	-->	*Access Probe*	1	P

8.1.3.10.3.3 Specific message or IE contents

Table 8.1.3.10.3.3-1: *Void*

Table 8.1.3.10.3.3-2: RRCConnectionRelease (step 1, Table 8.1.3.10.3.2-1)

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 {			
cdma2000-1xRTT	cdma2000-CarrierInfo for Cell 19		
}			
}			
}			
}			
}			

8.1.3.11 RRC connection release / Redirection to another E-UTRAN band

8.1.3.11.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE receives an RRCConnectionRelease message including an IE redirectedCarrierInfo with E-
UTRA CarrierFreq on different E-UTRAN band }
   then { UE enters RRC_IDLE state on new E-UTRA frequency included in IE redirectedCarrierInfo }
          }
```

8.1.3.11.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.8.3, 5.3.12 and TS 36.304, clauses 5.2.4.1, 5.2.7.

[TS 36.331, clause 5.3.8.3]

The UE shall:

1> delay the following actions defined in this sub-clause 60ms from the moment the *RRCConnectionRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged, whichever is earlier;

1> if the *RRCConnectionRelease* message includes the *idleModeMobilityControlInfo*:

…

1> else:

2> apply the cell reselection priority information broadcast in the system information;

1> if the *releaseCause* received in the *RRCConnectionRelease* message indicates '*loadBalancingTAURequired*':

…

1> else:

2> perform the actions upon leaving RRC_CONNECTED as specified in 5.3.12, with release cause 'other'.

[TS 36.331, clause 5.3.12]

Upon leaving RRC_CONNECTED, the UE shall:

…

1> indicate the release of the RRC connection to upper layers together with the release cause;

1> if leaving RRC_CONNECTED was not triggered by reception of the *MobilityFromEUTRACommand* message:

2> enter RRC_IDLE by performing cell selection in accordance with the cell selection process, defined for the case of leaving RRC_CONNECTED, as specified in TS 36.304 [4].

[TS 36.304, clause 5.2.4.1]

…

UE shall only perform cell reselection evaluation for E-UTRAN frequencies and inter-RAT frequencies that are given in system information and for which the UE has a priority provided.

…

[TS 36.304, clause 5.2.7]

On transition from RRC_CONNECTED to RRC_IDLE, UE shall select a suitable cell to camp on according to *redirectedCarrierInfo*, if included in the *RRCConnectionRelease* message. Otherwise UE shall select a suitable cell on an EUTRA carrier. If no suitable cell is found, the UE shall perform a cell selection starting with Stored Information Cell Selection procedure in order to find a suitable cell to camp on.

...

8.1.3.11.3 Test description

8.1.3.11.3.1 Pre-test conditions

System Simulator:

- 2 cells on different E-UTRA frequencies and different tracking areas:

- Cell 1 serving cell
- Cell 10 suitable neighbour inter-band cell
- Cell power levels are selected according to [18] so that camping on Cell 1 is guaranteed
- 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.

8.1.3.11.3.2 Test procedure sequence

Table 8.1.3.11.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionRelease* message (IE *redirectedCarrierInfo* including *eutra* of Cell 10).	<--	*RRCConnectionRelease*	-	-
2	Check: does the test result of generic test procedure in TS 36.508 subclause 6.4.2.7 indicate that the UE is camped on E-UTRAN Cell 10?	-	-	1	-

8.1.3.11.3.3 Specific message contents

Table 8.1.3.11.3.3-1: Conditions for table 8.1.3.11.3.3-3

Condition descriptions
Cell 1 This condition applies to system information transmitted on Cell 1.
Cell 10 This condition applies to system information transmitted on Cell 10.

Table 8.1.3.11.3.3-2: *SystemInformationBlockType5* for cells 1 and 10 (preamble and all steps, Table 8.1.3.11.3.2-1)

Derivation Path: 36.508 table 4.4.3.3-4			
Information Element	**Value/remark**	**Comment**	**Condition**
SystemInformationBlockType5 ::= SEQUENCE {			
interFreqCarrierFreqList SEQUENCE (SIZE (1..maxFreq)) OF SEQUENCE {			
dl-CarrierFreq[n]	Same downlink EARFCN as used for Cell 10		Cell 1
	Same downlink EARFCN as used for Cell 1		Cell 10
cellReselectionPriority[n]	3		Cell 1
cellReselectionPriority[n]	3		Cell 10
}			
}			

Table 8.1.3.11.3.3-3: *RRCConnectionRelease* message (step 1, Table 8.1.3.11.3.2-1)

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 10		
}			
}			
}			
}			
}			

8.1.3.11a RRC connection release / Redirection to another E-UTRAN band / Between FDD and TDD

8.1.3.11a.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA FDD RRC_CONNECTED state }
ensure that {
  when { UE receives an RRCConnectionRelease message including an IE redirectedCarrierInfo with E-
UTRA CarrierFreq on different E-UTRAN TDD band }
    then { UE enters RRC_IDLE state on new E-UTRA TDD frequency included in IE redirectedCarrierInfo
}
}
```

(2)

```
with { UE in E-UTRA TDD RRC_CONNECTED state }
ensure that {
  when { UE receives an RRCConnectionRelease message including an IE redirectedCarrierInfo with E-
UTRA CarrierFreq on different E-UTRAN FDD band }
    then { UE enters RRC_IDLE state on new E-UTRA FDD frequency included in IE redirectedCarrierInfo
}
}
```

8.1.3.11a.2 Conformance requirements

References: The conformance requirements covered in the current TC are specified in: TS 36.331, clauses 5.3.8.3, 5.3.12 and TS 36.304, clauses 5.2.4.1, 5.2.7.

[TS 36.331, clause 5.3.8.3]

The UE shall:

1> delay the following actions defined in this sub-clause 60ms from the moment the *RRCConnectionRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged, whichever is earlier;

1> if the *RRCConnectionRelease* message includes the *idleModeMobilityControlInfo*:

…

1> else:

2> apply the cell reselection priority information broadcast in the system information;

1> if the *releaseCause* received in the *RRCConnectionRelease* message indicates '*loadBalancingTAURequired*':

…

1> else:

2> perform the actions upon leaving RRC_CONNECTED as specified in 5.3.12, with release cause 'other'.

[TS 36.331, clause 5.3.12]

Upon leaving RRC_CONNECTED, the UE shall:

…

1> indicate the release of the RRC connection to upper layers together with the release cause;

1> if leaving RRC_CONNECTED was not triggered by reception of the *MobilityFromEUTRACommand* message:

2> enter RRC_IDLE by performing cell selection in accordance with the cell selection process, defined for the case of leaving RRC_CONNECTED, as specified in TS 36.304 [4].

[TS 36.304, clause 5.2.4.1]

…

UE shall only perform cell reselection evaluation for E-UTRAN frequencies and inter-RAT frequencies that are given in system information and for which the UE has a priority provided.

…

[TS 36.304, clause 5.2.7]

On transition from RRC_CONNECTED to RRC_IDLE, UE shall select a suitable cell to camp on according to *redirectedCarrierInfo*, if included in the *RRCConnectionRelease* message. Otherwise UE shall select a suitable cell on an EUTRA carrier. If no suitable cell is found, the UE shall perform a cell selection starting with Stored Information Cell Selection procedure in order to find a suitable cell to camp on.

...

8.1.3.11a.3 Test description

8.1.3.11a.3.1 Pre-test conditions

System Simulator:

- 2 cells on different E-UTRA bands which are in different E-UTRA mode (E-UTRA FDD and E-UTRA TDD) and PLMNs, both PLMNs are UE's EPLMN.

- Cell 1 is FDD cell and Cell 28 is TDD cell

-

- Each cell has only a single PLMN identity. The PLMNs are identified in the test by the identifiers in Table 8.1.3.11a.3.1-1.

Table 8.1.3.11a.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 8.1.3.11a.3.3-3.

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

8.1.3.11a.3.2 Test procedure sequence

Table 8.1.3.11a.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS transmits an *RRCConnectionRelease* message (IE *redirectedCarrierInfo* including eutra CarrierFreq of Cell 28.	<--	*RRCConnectionRelease*	-	-
2	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.7 indicate that the UE is camped on E-UTRAN Cell 28? NOTE: The TAU is accepted with PLMN1 listed as an Equivalent PLMN	-	-	1	-
3	Generic test procedure in TS 36.508 subclause 4.5.3.3 is performed to make the UE enter state Generic RB Established (state 3) on Cell 28.	-	-	-	-
4	SS transmits an *RRCConnectionRelease* message (IE *redirectedCarrierInfo* including eutra CarrierFreq of Cell 1).	<--	*RRCConnectionRelease*	-	-
5	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.7 indicate that the UE is camped on E-UTRAN Cell 1? NOTE: The TAU is accepted with PLMN2 listed as an Equivalent PLMN	-	-	2	-

.

8.1.3.11a.3.3 Specific message contents

Table 8.1.3.11a.3.3-1: *RRCConnectionRelease* message (step 1, Table 8.1.3.11a.3.2-1)

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 28		
}			
}			
}			
}			
}			

Table 8.1.3.11a.3.3-2: *RRCConnectionRelease* message (step 4, Table 8.1.3.11a.3.2-1)

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 1		
}			
}			
}			
}			
}			

Table 8.1.3.11a.3.3-3: ATTACH ACCEPT for Cell 1 (preamble)

Derivation path: 36.508 Table 4.7.2-1			
Information Element	**Value/Remark**	**Comment**	**Condition**
Equivalent PLMNs	PLMN2		

Table 8.1.3.11a.3.3-4: TRACKING AREA UPDATE ACCEPT for Cell 28 (step 2, Table 8.1.3.11a.3.2-2)

Derivation path: 36.508 Table 4.7.2-24			
Information Element	**Value/Remark**	**Comment**	**Condition**
Equivalent PLMNs	PLMN1		

Table 8.1.3.11a.3.3-5: TRACKING AREA UPDATE ACCEPT for Cell 1 (step 5, Table 8.1.3.11a.3.2-2)

Derivation path: 36.508 Table 4.7.2-24			
Information Element	**Value/Remark**	**Comment**	**Condition**
Equivalent PLMNs	PLMN2		

8.1.3.12 RRC connection release / Success / With priority information / Inter-band

8.1.3.12.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_IDLE state having received an RRCConnectionRelease message with the
freqPriorityListEUTRA with higher priority frequency in different band}
ensure that {
  when { UE detects the cell re-selection criteria are met for the cell which belongs to the higher
priority band }
    then { UE reselects the cell which belongs to the higher priority band}
           }
```

8.1.3.12.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.8.3 and TS 36.304, clause 5.2.4.1, 5.2.4.2 and 5.2.4.5.

[TS 36.331, clause 5.3.8.3]

The UE shall:

1> delay the following actions defined in this sub-clause 60 ms from the moment the *RRCConnectionRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged, whichever is earlier;

1> if the *RRCConnectionRelease* message includes the *idleModeMobilityControlInfo*:

2> store the cell reselection priority information provided by the *idleModeMobilityControlInfo*;

2> if the *t320* is included:

3> start timer T320, with the timer value set according to the value of *t320*;

1> else:

...

1> if the *releaseCause* received in the *RRCConnectionRelease* message indicates '*loadBalancingTAURequired*':

2> perform the actions upon leaving RRC_CONNECTED as specified in 5.3.12, with release cause 'load balancing TAU required';

1> else:

2> perform the actions upon leaving RRC_CONNECTED as specified in 5.3.12, with release cause 'other';

[TS 36.304, clause 5.2.4.1]

Absolute priorities of different E-UTRAN frequencies or inter-RAT frequencies may be provided to the UE in the system information, in the *RRCConnectionRelease* message, or by inheriting from another RAT at inter-RAT cell (re)selection. In the case of system information, an E-UTRAN frequency or inter-RAT frequency may be listed without providing a priority (i.e. the field *cellReselectionPriority* is absent for that frequency). If priorities are provided in dedicated signalling, the UE shall ignore all the priorities provided in system information. If UE is in *camped on any cell* state, UE shall only apply the priorities provided by system information from current cell, and the UE preserves priorities provided by dedicated signalling unless specified otherwise. When the UE in *camped normally* state, has only dedicated priorities other than for the current frequency, the UE shall consider the current frequency to be the lowest priority frequency (i.e. lower than the eight network configured values). While the UE is camped on a suitable CSG cell, the UE shall always consider the current frequency to be the highest priority frequency (i.e. higher than the eight network configured values), irrespective of any other priority value allocated to this frequency. The UE shall delete priorities provided by dedicated signalling when:

- the UE enters RRC_CONNECTED state; or
- the optional validity time of dedicated priorities (T320) expires; or
- a PLMN selection is performed on request by NAS [5].

NOTE 1: Equal priorities between RATs are not supported.

The UE shall only perform cell reselection evaluation for E-UTRAN frequencies and inter-RAT frequencies that are given in system information and for which the UE has a priority provided.

The UE shall not consider any black listed cells as candidate for cell reselection.

The UE shall inherit the priorities provided by dedicated signalling and the remaining validity time (i.e., T320 in E-UTRA, T322 in UTRA and T3230 in GERAN), if configured, at inter-RAT cell (re)selection.

NOTE 2: The network may assign dedicated cell reselection priorities for frequencies not configured by system information.

[TS 36.304, clause 5.2.4.2]

When evaluating Srxlev and Squal of non-serving cells for reselection purposes, the UE shall use parameters provided by the serving cell.

Following rules are used by the UE to limit needed measurements:

- If the serving cell fulfils Srxlev > $S_{IntraSearchP}$ and Squal > $S_{IntraSearchQ}$, the UE may choose not to perform intra-frequency measurements.
- Otherwise, the UE shall perform intra-frequency measurements.
- The UE shall apply the following rules for E-UTRAN inter-frequencies and inter-RAT frequencies which are indicated in system information and for which the UE has priority provided as defined in 5.2.4.1:

- For an E-UTRAN inter-frequency or inter-RAT frequency with a reselection priority higher than the reselection priority of the current E-UTRA frequency the UE shall perform measurements of higher priority E-UTRAN inter-frequency or inter-RAT frequencies according to [10].

- For an E-UTRAN inter-frequency with an equal or lower reselection priority than the reselection priority of the current E-UTRA frequency and for inter-RAT frequency with lower reselection priority than the reselection priority of the current E-UTRAN frequency:

  - If the serving cell fulfils Srxlev > $S_{nonIntraSearchP}$ and Squal > $S_{nonIntraSearchQ}$, the UE may choose not to perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority.

  - Otherwise, the UE shall perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority according to [10].

[TS 36.304, clause 5.2.4.5]

If *threshServingLowQ* is provided in *SystemInformationBlockType3*, cell reselection to a cell on a higher priority E-UTRAN frequency or inter-RAT frequency than the serving frequency shall be performed if:

- A cell of a higher priority EUTRAN or UTRAN RAT/ frequency fulfils Squal > $Thresh_{X, HighQ}$ during a time interval $Treselection_{RAT}$; or

- A cell of a higher priority GERAN or CDMA2000 RAT/ frequency fulfils Srxlev > $Thresh_{X, HighP}$ during a time interval $Treselection_{RAT}$; and

- More than 1 second has elapsed since the UE camped on the current serving cell.

Otherwise, cell reselection to a cell on a higher priority E-UTRAN frequency or inter-RAT frequency than the serving frequency shall be performed if:

- A cell of a higher priority RAT/ frequency fulfils Srxlev > $Thresh_{X, HighP}$ during a time interval $Treselection_{RAT}$; and

More than 1 second has elapsed since the UE camped on the current serving cell.

Cell reselection to a cell on an equal priority E-UTRAN frequency shall be based on ranking for Intra-frequency cell reselection as defined in sub-clause 5.2.4.6.

If *threshServingLowQ* is provided in *SystemInformationBlockType3*, cell reselection to a cell on a lower priority E-UTRAN frequency or inter-RAT frequency than the serving frequency shall be performed if:

- The serving cell fulfils Squal < $Thresh_{Serving, LowQ}$ and a cell of a lower priority EUTRAN or UTRAN RAT/ frequency fulfils Squal > $Thresh_{X, LowQ}$ during a time interval $Treselection_{RAT}$; or

- The serving cell fulfils Squal < $Thresh_{Serving, LowQ}$ and a cell of a lower priority GERAN or CDMA2000 RAT/ frequency fulfils Srxlev > $Thresh_{X, LowP}$ during a time interval $Treselection_{RAT}$; and

- More than 1 second has elapsed since the UE camped on the current serving cell.

Otherwise, cell reselection to a cell on a lower priority E-UTRAN frequency or inter-RAT frequency than the serving frequency shall be performed if:

- The serving cell fulfils Srxlev < $Thresh_{Serving, LowP}$ and a cell of a lower priority RAT/ frequency fulfils Srxlev > $Thresh_{X, LowP}$ during a time interval $Treselection_{RAT}$; and

- More than 1 second has elapsed since the UE camped on the current serving cell.

Cell reselection to a higher priority RAT/ frequency shall take precedence over a lower priority RAT/ frequency, if multiple cells of different priorities fulfil the cell reselection criteria.

For cdma2000 RATs, Srxlev is equal to -FLOOR(-2 x 10 x log10 Ec/Io) in units of 0.5 dB, as defined in [18], with Ec/Io referring to the value measured from the evaluated cell.

For cdma2000 RATs, $Thresh_{X, HighP}$ and $Thresh_{X, LowP}$ are equal to -1 times the values signalled for the corresponding parameters in the system information.

In all the above criteria the value of $Treselection_{RAT}$ is scaled when the UE is in the medium or high mobility state as defined in subclause 5.2.4.3.1. If more than one cell meets the above criteria, the UE shall reselect a cell as follows:

- If the highest-priority frequency is an E-UTRAN frequency, a cell ranked as the best cell among the cells on the highest priority frequency(ies) meeting the criteria according to section 5.2.4.6;
- If the highest-priority frequency is from another RAT, a cell ranked as the best cell among the cells on the highest priority frequency(ies) meeting the criteria of that RAT.

8.1.3.12.3 Test description

8.1.3.12.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 3 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.

NOTE 3: For Cell 10 TAI is set to TAI-2

UE:

None.

Preamble:

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

8.1.3.12.3.2 Test procedure sequence

Table 8.1.3.12.3.2-1 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 8.1.3.12.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 3	Cell 10	Remark
T0	Cell-specific RS EPRE	dBm/ 15kHz	-85	"off"	"off"	The power level values are assigned to satisfy $SrxlevCell_1 > S_{nonintrasearch}$. (NOTE 1)
T1	Cell-specific RS EPRE	dBm/ 15kHz	-85	-73	-73	The power level values are assigned to satisfy both $Thresh_{x, low} < SrxlevCell_{30}$ and $Thresh_{x, high} < SrxlevCell_{10}$.
NOTE 1: Power level "Off" is defined in TS36.508 Table 6.2.2.1-1.						

Table 8.1.3.12.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionRelease* message including the *freqPriorityListEUTRA* on Cell 1.	<--	*RRCConnectionRelease*	-	-
2	Wait for 5 s for the UE to enter E-UTRA RRC_IDLE state on Cell 1.	-	-	-	-
3	The SS changes Cell 1, Cell 3 and Cell 10 level according to the row "T1" in table 8.1.3.12.3.2-1.	-	-	-	-
4	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.7 indicate that the UE is camped on E-UTRAN Cell 10?	-	-	1	-

8.1.3.12.3.3 Specific message contents

Table 8.1.3.12.3.3-1: *RRCConnectionRelease* (step 1, Table 8.1.3.12.3.2-2)

Derivation Path: 36.508 Table 4.6.1-15			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRelease ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
rrcConnectionRelease-r8 SEQUENCE {			
idleModeMobilityControlInfo SEQUENCE {			
freqPriorityListEUTRA SEQUENCE (SIZE (1..maxFreq)) OF SEQUENCE {	3 entries		
carrierFreq[1]	Same downlink EARFCN as used for Cell 1		
cellReselectionPriority[1]	4		
carrierFreq[2]	Same downlink EARFCN as used for Cell 10		
cellReselectionPriority[2]	5		
carrierFreq[3]	Same downlink EARFCN as used for Cell 3		
cellReselectionPriority[3]	1		
}			
freqPriorityListGERAN	Not present		
freqPriorityListUTRA-FDD	Not present		
freqPriorityListUTRA-TDD	Not present		
bandClassPriorityListHRPD	Not present		
bandClassPriorityList1XRTT	Not present		
t320	Not present		
}			
}			
}			
}			
}			

Table 8.1.3.12.3.3-2: *SystemInformationBlockType5* for Cell 1 (preamble and all steps, Table 8.1.3.12.3.2-2)

Derivation path: 36.508 table 4.4.3.3-4			
Information Element	**Value/Remark**	**Comment**	**Condition**
SystemInformationBlockType5 ::= SEQUENCE {			
interFreqCarrierFreqList SEQUENCE (SIZE (1..maxFreq)) OF SEQUENCE {			
dl-CarrierFreq[1]	Same downlink EARFCN as used for Cell 3		
dl-CarrierFreq[2]	Same downlink EARFCN as used for Cell 10		
threshX-Low[1]	11		
threshX-High[2]	11		
}			
}			

Table 8.1.3.12.3.3-3: *SystemInformationBlockType5* for Cell 10 (all steps, Table 8.1.3.12.3.2-2)

Derivation path: 36.508 table 4.4.3.3-4			
Information Element	**Value/Remark**	**Comment**	**Condition**

SystemInformationBlockType5 ::= SEQUENCE {
interFreqCarrierFreqList SEQUENCE (SIZE (1..maxFreq)) OF SEQUENCE {
dl-CarrierFreq[1]
 	
dl-CarrierFreq[2]
 	
cellReselectionPriority[2]
}
}
	2 entries
	
	Same downlink EARFCN as used for Cell 1
	Same downlink EARFCN as used for Cell 3
	1		

8.1.3.12a RRC connection release / Success / With priority information / Inter- band / Between FDD and TDD

8.1.3.12a.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_IDLE state in LTE FDD mode having received an RRCConnectionRelease message
with the freqPriorityListEUTRA with higher priority frequency on different LTE TDD band }
ensure that {
  when { UE detects the cell re-selection criteria are met for the cell which belongs to the higher
priority frequency on different LTE TDD band }
    then { UE reselects the cell which belongs to the higher priority frequency on different LTE TDD
band }
            }
```

(2)

```
with { UE in E-UTRA RRC_IDLE state in LTE TDD mode having received an RRCConnectionRelease message
with the freqPriorityListEUTRA with lower priority frequency on different LTE FDD band }
ensure that {
  when { UE detects the cell re-selection criteria are met for the cell which belongs to the lower
priority frequency on different LTE FDD band }
    then { UE reselects the cell which belongs to the lower priority frequency on different LTE FDD
band }
            }
```

8.1.3.12a.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.8.3 and TS 36.304, clause 5.2.4.1, 5.2.4.2 and 5.2.4.5.

[TS 36.331, clause 5.3.8.3]

The UE shall:

1> delay the following actions defined in this sub-clause 60 ms from the moment the *RRCConnectionRelease* message was received or optionally when lower layers indicate that the receipt of the *RRCConnectionRelease* message has been successfully acknowledged, whichever is earlier;

1> if the *RRCConnectionRelease* message includes the *idleModeMobilityControlInfo*:

2> store the cell reselection priority information provided by the *idleModeMobilityControlInfo*;

2> if the *t320* is included:

3> start timer T320, with the timer value set according to the value of *t320*;

1> else:

...

1> if the *releaseCause* received in the *RRCConnectionRelease* message indicates '*loadBalancingTAURequired*':

2> perform the actions upon leaving RRC_CONNECTED as specified in 5.3.12, with release cause 'load balancing TAU required';

1> else:

2> perform the actions upon leaving RRC_CONNECTED as specified in 5.3.12, with release cause 'other';

[TS 36.304, clause 5.2.4.1]

Absolute priorities of different E-UTRAN frequencies or inter-RAT frequencies may be provided to the UE in the system information, in the *RRCConnectionRelease* message, or by inheriting from another RAT at inter-RAT cell (re)selection. In the case of system information, an E-UTRAN frequency or inter-RAT frequency may be listed without providing a priority (i.e. the field *cellReselectionPriority* is absent for that frequency). If priorities are provided in dedicated signalling, the UE shall ignore all the priorities provided in system information. If UE is in *camped on any cell* state, UE shall only apply the priorities provided by system information from current cell, and the UE preserves priorities provided by dedicated signalling unless specified otherwise. When the UE in *camped normally* state, has only dedicated priorities other than for the current frequency, the UE shall consider the current frequency to be the lowest priority frequency (i.e. lower than the eight network configured values). While the UE is camped on a suitable CSG cell, the UE shall always consider the current frequency to be the highest priority frequency (i.e. higher than the eight network configured values), irrespective of any other priority value allocated to this frequency. The UE shall delete priorities provided by dedicated signalling when:

- the UE enters RRC_CONNECTED state; or
- the optional validity time of dedicated priorities (T320) expires; or
- a PLMN selection is performed on request by NAS [5].

NOTE 1: Equal priorities between RATs are not supported.

The UE shall only perform cell reselection evaluation for E-UTRAN frequencies and inter-RAT frequencies that are given in system information and for which the UE has a priority provided.

The UE shall not consider any black listed cells as candidate for cell reselection.

The UE shall inherit the priorities provided by dedicated signalling and the remaining validity time (i.e., T320 in E-UTRA, T322 in UTRA and T3230 in GERAN), if configured, at inter-RAT cell (re)selection.

NOTE 2: The network may assign dedicated cell reselection priorities for frequencies not configured by system information.

[TS 36.304, clause 5.2.4.2]

When evaluating Srxlev and Squal of non-serving cells for reselection purposes, the UE shall use parameters provided by the serving cell.

Following rules are used by the UE to limit needed measurements:

- If the serving cell fulfils Srxlev > $S_{IntraSearchP}$ and Squal > $S_{IntraSearchQ}$, the UE may choose not to perform intra-frequency measurements.
- Otherwise, the UE shall perform intra-frequency measurements.
- The UE shall apply the following rules for E-UTRAN inter-frequencies and inter-RAT frequencies which are indicated in system information and for which the UE has priority provided as defined in 5.2.4.1:
  - For an E-UTRAN inter-frequency or inter-RAT frequency with a reselection priority higher than the reselection priority of the current E-UTRA frequency the UE shall perform measurements of higher priority E-UTRAN inter-frequency or inter-RAT frequencies according to [10].
  - For an E-UTRAN inter-frequency with an equal or lower reselection priority than the reselection priority of the current E-UTRA frequency and for inter-RAT frequency with lower reselection priority than the reselection priority of the current E-UTRAN frequency:

- If the serving cell fulfils Srxlev > $S_{nonIntraSearchP}$ and Squal > $S_{nonIntraSearchQ}$, the UE may choose not to perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority.

- Otherwise, the UE shall perform measurements of E-UTRAN inter-frequencies or inter-RAT frequency cells of equal or lower priority according to [10].

[TS 36.304, clause 5.2.4.5]

If *threshServingLowQ* is provided in *SystemInformationBlockType3*, cell reselection to a cell on a higher priority E-UTRAN frequency or inter-RAT frequency than the serving frequency shall be performed if:

- A cell of a higher priority EUTRAN or UTRAN RAT/ frequency fulfils Squal > $Thresh_{X, HighQ}$ during a time interval $Treselection_{RAT}$; or

- A cell of a higher priority GERAN or CDMA2000 RAT/ frequency fulfils Srxlev > $Thresh_{X, HighP}$ during a time interval $Treselection_{RAT}$; and

- More than 1 second has elapsed since the UE camped on the current serving cell.

Otherwise, cell reselection to a cell on a higher priority E-UTRAN frequency or inter-RAT frequency than the serving frequency shall be performed if:

- A cell of a higher priority RAT/ frequency fulfils Srxlev > $Thresh_{X, HighP}$ during a time interval $Treselection_{RAT}$; and

More than 1 second has elapsed since the UE camped on the current serving cell.

Cell reselection to a cell on an equal priority E-UTRAN frequency shall be based on ranking for Intra-frequency cell reselection as defined in sub-clause 5.2.4.6.

If *threshServingLowQ* is provided in *SystemInformationBlockType3*, cell reselection to a cell on a lower priority E-UTRAN frequency or inter-RAT frequency than the serving frequency shall be performed if:

- The serving cell fulfils Squal < $Thresh_{Serving, LowQ}$ and a cell of a lower priority EUTRAN or UTRAN RAT/ frequency fulfils Squal > $Thresh_{X, LowQ}$ during a time interval $Treselection_{RAT}$; or

- The serving cell fulfils Squal < $Thresh_{Serving, LowQ}$ and a cell of a lower priority GERAN or CDMA2000 RAT/ frequency fulfils Srxlev > $Thresh_{X, LowP}$ during a time interval $Treselection_{RAT}$; and

- More than 1 second has elapsed since the UE camped on the current serving cell.

Otherwise, cell reselection to a cell on a lower priority E-UTRAN frequency or inter-RAT frequency than the serving frequency shall be performed if:

- The serving cell fulfils Srxlev < $Thresh_{Serving, LowP}$ and a cell of a lower priority RAT/ frequency fulfils Srxlev > $Thresh_{X, LowP}$ during a time interval $Treselection_{RAT}$; and

- More than 1 second has elapsed since the UE camped on the current serving cell.

Cell reselection to a higher priority RAT/ frequency shall take precedence over a lower priority RAT/ frequency, if multiple cells of different priorities fulfil the cell reselection criteria.

For cdma2000 RATs, Srxlev is equal to -FLOOR(-2 x 10 x log10 Ec/Io) in units of 0.5 dB, as defined in [18], with Ec/Io referring to the value measured from the evaluated cell.

For cdma2000 RATs, $Thresh_{X, HighP}$ and $Thresh_{X, LowP}$ are equal to -1 times the values signalled for the corresponding parameters in the system information.

In all the above criteria the value of $Treselection_{RAT}$ is scaled when the UE is in the medium or high mobility state as defined in subclause 5.2.4.3.1. If more than one cell meets the above criteria, the UE shall reselect a cell as follows:

- If the highest-priority frequency is an E-UTRAN frequency, a cell ranked as the best cell among the cells on the highest priority frequency(ies) meeting the criteria according to section 5.2.4.6;

- If the highest-priority frequency is from another RAT, a cell ranked as the best cell among the cells on the highest priority frequency(ies) meeting the criteria of that RAT.

8.1.3.12a.3 Test description

8.1.3.12a.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 2 are FDD cell and Cell 10 is TDD cell
- 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.

NOTE 1: For Cell 10 TAI is set to TAI-2

UE:

None.

Preamble:

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

8.1.3.12a.3.2 Test procedure sequence

Table 8.1.3.12a.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 8.1.3.12a.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 2	Cell 10	Remark
T0	Cell-specific RS EPRE	dBm/15k Hz	-79	"off"	"off"	The power level values are assigned to satisfy $Srxlev_{Cell\ 1} > S_{intrasearch}$. (NOTE 1)
T1	Cell-specific RS EPRE	dBm/15k Hz	-79	-73	-73	The power level values are assigned to satisfy $Srxlev_{Cell\ 10} > Thresh_{x,high}$ when reselect to higher priority Cell 10 from lower priority Cell 1
T2	Cell-specific RS EPRE	dBm/15k Hz	-79	-73	-85	The power level values are assigned to satisfy both $Srxlev_{Cell\ 2} > Thresh_{x,low}$ (good enough) and $Srxlev_{Cell\ 10} < Thresh_{serving,low}$(bad enough)
NOTE 1: Power level "Off" is defined in TS36.508 Table 6.2.2.1-1.						

Table 8.1.3.12a.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionRelease* message including the *freqPriorityListEUTRA* on Cell 1.	<--	*RRCConnectionRelease*	-	-
2	Wait for 5 s for the UE to enter E-UTRA RRC_IDLE state on Cell 1.	-	-	-	-
3	The SS changes Cell 2 and Cell 10 levels according to the row "T1" in table 8.1.3.12a.3.2-1.	-	-	-	-
4-8	Check: Does the test result of generic test procedure in TS 36.508 steps 1 to 5 of subclause 6.4.2.7 indicate that the UE is camped on E-UTRAN Cell 10?"	-	-	1	-
9	The SS transmits an *RRCConnectionRelease* message including the *freqPriorityListEUTRA* on Cell 10.	<--	*RRCConnectionRelease*	-	-
10	Wait for 5 s for the UE to enter E-UTRA RRC_IDLE state on Cell 10.	-	-	-	-
11	The SS changes Cell 1 and Cell 10 level according to the row "T2" in table 8.1.3.12a.3.2-1.	-	-	-	-
12-17	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.7 indicate that the UE is camped on E-UTRAN Cell 2?	-	-	2	-

8.1.3.12a.3.3 Specific message contents

Table 8.1.3.12a.3.3-1: *RRCConnectionRelease* (step 1 and step 9, Table 8.1.3.12a.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 {			
idleModeMobilityControlInfo SEQUENCE {			
freqPriorityListEUTRA SEQUENCE (SIZE (1..maxFreq)) OF SEQUENCE {	2 entries		
carrierFreq[1]	Same downlink EARFCN as used for Cell 1		
cellReselectionPriority[1]	4		
carrierFreq[2]	Same downlink EARFCN as used for Cell 10		
cellReselectionPriority[2]	5		
}			
freqPriorityListGERAN	Not present		
freqPriorityListUTRA-FDD	Not present		
freqPriorityListUTRA-TDD	Not present		
bandClassPriorityListHRPD	Not present		
bandClassPriorityList1XRTT	Not present		
t320	Not present		
}			
}			
}			
}			
}			

Table 8.1.3.12a.3.3-2: *SystemInformationBlockType5* for Cell 1 (preamble and all steps, Table 8.1.3.12a.3.2-2)

Derivation path: 36.508 table 4.4.3.3-4			
Information Element	**Value/Remark**	**Comment**	**Condition**
SystemInformationBlockType5 ::= SEQUENCE {			
interFreqCarrierFreqList SEQUENCE (SIZE (1..maxFreq)) OF SEQUENCE {			
dl-CarrierFreq[1]	Same downlink EARFCN as used for Cell 10		
threshX-High[1]	11	Actual value of threshold = IE value * 2 [dB]	
threshX-Low[1]	11	Actual value of threshold = IE value * 2 [dB]	
}			
}			

Table 8.1.3.12a.3.3-3: *SystemInformationBlockType3* for Cell 10 (preamble and all steps, Table 8.1.3.12a.3.2-2)

Derivation Path: TS 36.508 [7] clause 4.4.3.3, Table 4.4.3.3-2			
Information Element	**Value/remark**	**Comment**	**Condition**
cellReselectionServingFreqInfo SEQUENCE {			
threshServingLow	14 (28 dB)	28 is actual value in dB (14 * 2 dB)	
}			
intraFreqCellReselectionInfo SEQUENCE {			
s-IntraSearch	0 (0 dB)		
}			

Table 8.1.3.12a.3.3-4: *SystemInformationBlockType5* for Cell 10 (preamble and all steps, Table 8.1.3.12a.3.2-2)

Derivation path: 36.508 table 4.4.3.3-4			
Information Element	**Value/Remark**	**Comment**	**Condition**
SystemInformationBlockType5 ::= SEQUENCE {			
interFreqCarrierFreqList SEQUENCE (SIZE (1..maxFreq)) OF SEQUENCE {			
dl-CarrierFreq[1]	Same downlink EARFCN as used for Cell 1		
threshX-High[1]	11	Actual value of threshold = IE value * 2 [dB]	
threshX-Low[1]	11	Actual value of threshold = IE value * 2 [dB]	
}			
}			

Table 8.1.3.12a.3.3-5: *SystemInformationBlockType3* for Cells 1 and 2 (preamble and all steps, Table 8.1.3.12a.3.2-2)

Derivation Path: TS 36.508 [7] clause 4.4.3.3, Table 4.4.3.3-2			
Information Element	**Value/remark**	**Comment**	**Condition**
intraFreqCellReselectionInfo SEQUENCE {			
s-IntraSearch	0 (0 dB)		
}			

8.2 RRC connection reconfiguration

8.2.1 Radio bearer establishment

8.2.1.1 RRC connection reconfiguration / Radio bearer establishment for transition from RRC_IDLE to RRC_CONNECTED / Success / Default bearer / Early bearer establishment

8.2.1.1.1 Test Purpose (TP)

(1)

```
with { UE having completed the RRC connection establishment procedure }
ensure that {
  when { SS sends in sequence a SecurityModeCommand and an RRCConnectionReconfiguration message }
    then { UE establishes the initial security configuration in accordance with the received
securityConfigSMC included in SecurityModeCommand and successfully completes the connection
reconfiguration }
            }
```

8.2.1.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: 3GPP TS 36.331 clauses 5.1.2, 5.3.1.1, 5.3.5.3, 5.3.10.1 and 5.3.10.3. The following represent an extraction of the requirements relevant to the test purpose.

[TS 36.331, clause 5.1.2]

The UE shall:

1> process the received messages in order of reception by RRC, i.e. the processing of a message shall be completed before starting the processing of a subsequent message;

NOTE: 1 E-UTRAN may initiate a subsequent procedure prior to receiving the UEs response of a previously initiated procedure.

[TS 36.331, clause 5.3.1.1]

After having initiated the initial security activation procedure, E-UTRAN initiates the establishment of SRB2 and DRBs, i.e. E-UTRAN may do this prior to receiving the confirmation of the initial security activation from the UE. In any case, E-UTRAN will apply both ciphering and integrity protection for the RRC connection reconfiguration messages used to establish SRB2 and DRBs.

[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 this is the first *RRCConnectionReconfiguration* message after successful completion of the RRC Connection Re-establishment procedure:

...

1> else:

2> If the *RRCConnectionReconfiguration* message includes the *radioResourceConfigDedicated*:

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

NOTE 2: If the *RRCConnectionReconfiguration* message includes the establishment of radio bearers other than SRB1, the UE may start using these radio bearers immediately, i.e. there is no need to wait for an outstanding acknowledgment of the *SecurityModeComplete* message.

...

1> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission using the new configuration, upon which the procedure ends;

[TS 36.331, clause 5.3.10.1]

The UE shall:

1> for each *srb-Identity* value included in the *srb-ToAddModList* that is not part of the current UE configuration (SRB establishment):

2> apply the specified configuration defined in 9.1.2 for the corresponding SRB;

2> establish a PDCP entity and configure it with the current security configuration, if applicable;

2> establish an RLC entity in accordance with the received *rlc-Config*;

2> establish a DCCH logical channel in accordance with the received *logicalChannelConfig* and with the logical channel identity set in accordance with 9.1.2

[TS 36.331, clause 5.3.10.3]

The UE shall:

1> for each *drb-Identity* value included in the *drb-ToAddModList* that is not part of the current UE configuration (DRB establishment):

2> establish a PDCP entity and configure it with the current security configuration and in accordance with the received *pdcp-Config*;

2> establish an RLC entity in accordance with the received *rlc-Config*;

2> establish a DTCH logical channel in accordance with the received *logicalChannelIdentity* and the received *logicalChannelConfig*;

1> indicate the establishment of the DRB(s) and the *eps-BearerIdentity* of the established DRB(s) to upper layers;

8.2.1.1.3 Test description

8.2.1.1.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

- The UE is in state Registered, Idle mode (state 2) according to [18].

8.2.1.1.3.2 Test procedure sequence

Table 8.2.1.1.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	SS sends a *Paging* message to the UE on the appropriate paging block, and including the UE identity in one entry of the IE *pagingRecordLists*.	<--	*Paging*	-	-
2	UE transmits an *RRCConnectionRequest* message.	-->	*RRCConnectionRequest*	-	-
3	SS transmit an *RRCConnectionSetup* message	<--	*RRCConnectionSetup*	-	-
4	The UE transmits an *RRCConnectionSetupComplete* to confirm the successful completion of the connection establishment. (Note 1)	-->	*RRCConnectionSetupComplete*	-	-
5	SS transmits a *SecurityModeCommand* message to activate AS security.	<--	*SecurityModeCommand*	-	-
6	Using the same TTI as the SecurityModeCommand message in step 5, the SS transmits an *RRCConnectionReconfiguration* message to establish a data radio bearer.	<--	*RRCConnectionReconfiguration*	-	-
7	Check: Does the UE transmit a *SecurityModeComplete* message?	-->	*SecurityModeComplete*	1	P
8	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message to confirm the establishment of data radio bearer?	-->	*RRCConnectionReconfigurationComplete*	1	P
9	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 1: Contains a SERVICE REQUEST NAS message.					

8.2.1.1.3.3 Specific message contents

Table 8.2.1.1.3.3-1: *RRCConnectionReconfiguration* (step 6, Table 8.2.1.1.3.2-1)

Derivation Path: 36.508 table 4.6.1-8, condition SRB2-DRB(1, 0)

8.2.1.2 Void

8.2.1.3 RRC connection reconfiguration / Radio bearer establishment / Success / Dedicated bearer

8.2.1.3.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { SS sends an RRCConnectionReconfiguration message including a drb-Identity that is not part
of the current UE configuration and a dedicatedInfoNASList}
    then { UE successfully establish the radio bearer according to IE radioResourceConfigDedicated }
           }
```

8.2.1.3.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: 3GPP TS 36.331 clauses 5.3.5.3 and 5.3.10.3.

The following represent an extraction of the requirements relevant to the test purpose.

[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 this is the first *RRCConnectionReconfiguration* message after successful completion of the RRC Connection Re-establishment procedure:

…

1> else:

2> If the *RRCConnectionReconfiguration* message includes the *radioResourceConfigDedicated*:

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

NOTE 2: If the *RRCConnectionReconfiguration* message includes the establishment of radio bearers other than SRB1, the UE may start using these radio bearers immediately, i.e. there is no need to wait for an outstanding acknowledgment of the *SecurityModeComplete* message.

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

2> forward each element of the *dedicatedInfoNASList* to upper layers;

…

1> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission using the new configuration, upon which the procedure ends;

[TS 36.331, clause 5.3.10.3]

The UE shall:

1> for each *drb-Identity* value included in the *drb-ToAddModList* that is not part of the current UE configuration (DRB establishment):

2> establish a PDCP entity and configure it with the current security configuration and in accordance with the received *pdcp-Config*;

2> establish an RLC entity in accordance with the received *rlc-Config*;

2> establish a DTCH logical channel in accordance with the received *logicalChannelIdentity* and the received *logicalChannelConfig*;

1> indicate the establishment of the DRB(s) and the *eps-BearerIdentity* of the established DRB(s) to upper layers;

8.2.1.3.3 Test description

8.2.1.3.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

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

8.2.1.3.3.2 Test procedure sequence

Table 8.2.1.3.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to establish a data radio bearer.	<--	*RRCConnectionReconfiguration*	-	-
2	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message?	-->	*RRCConnectionReconfigurationComplete*	1	P
3	The UE transmits an *ULInformationTransfer* message. This message includes an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message.	-->	*ULInformationTransfer*	-	-
4	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	-

8.2.1.3.3.3 Specific message contents

Table 8.2.1.3.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.1.3.3.2-1)

Derivation Path: 36.508 table 4.6.1-8, condition DRB(1,0)			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
dedicatedInfoNASList SEQUENCE (SIZE(1..maxDRB)) OF	1 entry		
dedicatedInfoNAS [1]	ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST with EPS bearer identity corresponding to drb-Identity 2	According 36.508 table 4.7.3-3	
}			
}			
}			
}			

8.2.1.4 Void

8.2.1.5 RRC connection reconfiguration / Radio bearer establishment for transition from RRC_Idle to RRC CONNECTED / Success / Latency check

8.2.1.5.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_IDLE state and has sent an RRCConnectionRequest message }
ensure that {
  when { UE receive a RRCConnectionSetup message and 16 subframes later receives an UL grant }
      then { UE successfully transmit RRCConnectionSetupComplete message }
                }
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE receive a SecurityModeCommand message and 11 subframes later receives an UL grant }
```

then { UE successfully establish the initial AS security activation according to IE *securityConfigSMC* }
}

(3)

with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
when { UE receive a *RRCConnectionReconfiguration* message including a *drb-Identity* that is not part of the current UE configuration and a *nas-DedicatedInformation* and 16 subframes later receives an UL grant }
then { UE successfully establish the radio bearer according to IE *radioResourceConfiguration* }
}

(4)

with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
when { UE receives an *UECapabilityEnquiry* message after AS security is activated and at 11 subframes later receives an UL grant }
then { UE successfully transmits an *UECapabilityInformation* message including UE radio access capability information corresponding to the *ue-RadioAccessCapRequest* variable }
}

8.2.1.5.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.3.4, 5.3.4.3, 5.3.5.3, 5.6.3.3 and 11.2.

[TS 36.331, clause 5.3.3.4]

The UE shall:

1> perform the radio resource configuration procedure in accordance with the received *radioResourceConfigDedicated* and as specified in 5.3.10;

1> if stored, discard the cell reselection priority information provided by the *idleModeMobilityControlInfo* or inherited from another RAT;

1> stop timer T300;

1> stop timer T302, if running;

1> stop timer T303, if running;

1> stop timer T305, if running;

1> perform the actions as specified in 5.3.3.7;

1> stop timer T320, if running;

1> enter RRC_CONNECTED;

1> stop the cell re-selection procedure;

1> set the content of *RRCConnectionSetupComplete* message as follows:

2> set the *selectedPLMN-Identity* to the PLMN selected by upper layers (see TS 23.122 [11], TS 24.301 [35]) from the PLMN(s) included in the *plmn-IdentityList* in *SystemInformationBlockType1*;

2> if upper layers provide the 'Registered MME', include and set the *registeredMME* as follows:

3> if the PLMN identity of the 'Registered MME' is different from the PLMN selected by the upper layers:

4> include the *plmnIdentity* in the *registeredMME* and set it to the value of the PLMN identity in the 'Registered MME' received from upper layers;

3> set the *mmegi* and the *mmec* to the value received from upper layers;

2> set the *dedicatedInfoNAS* to include the information received from upper layers;

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

[TS 36.331, clause 5.3.4.3]

The UE shall:

1> derive the K_{eNB} key, as specified in TS 33.401 [32];

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

1> request lower layers to verify the integrity protection of the *SecurityModeCommand* message, using the algorithm indicated by the *integrityProtAlgorithm* as included in the *SecurityModeCommand* message and the K_{RRCint} key;

1> if the *SecurityModeCommand* message passes the integrity protection check:

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

2> configure lower layers to apply integrity protection using the indicated algorithm and the K_{RRCint} key immediately, i.e. integrity protection shall be applied to all subsequent messages received and sent by the UE, including the *SecurityModeComplete* message;

2> configure lower layers to apply ciphering using the indicated algorithm, the K_{RRCenc} key and the K_{UPenc} key after completing the procedure, i.e. ciphering shall be applied to all subsequent messages received and sent by the UE, except for the *SecurityModeComplete* message which is sent unciphered;

2> consider AS security to be activated;

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

[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 this is the first *RRCConnectionReconfiguration* message after successful completion of the RRC Connection Re-establishment procedure:

…

1> else:

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

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

NOTE 2: If the *RRCConnectionReconfiguration* message includes the establishment of radio bearers other than SRB1, the UE may start using these radio bearers immediately, i.e. there is no need to wait for an outstanding acknowledgment of the *SecurityModeComplete* message.

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

2> forward each element of the *dedicatedInfoNASList* to upper layers;

…

1> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission using the new configuration, upon which the procedure ends;

[TS 36.331, clause 5.6.3.3]

The UE shall:

1> set the contents of *UECapabilityInformation* message as follows:

2> if the ue-CapabilityRequest includes 'eutra':

3> include the *UE-EUTRA-Capability* within a *ue-CapabilityRAT-Container* and with the *rat-Type* set to '*eutra*';

2> if the *ue-CapabilityRequest* includes '*geran-cs*' and if the UE supports GERAN CS domain:

3> include the UE radio access capabilities for GERAN CS within a *ue-CapabilityRAT-Container* and with the *rat-Type* set to '*geran-cs*';

2> if the *ue-CapabilityRequest* includes '*geran-ps*' and if the UE supports GERAN PS domain:

3> include the UE radio access capabilities for GERAN PS within a *ue-CapabilityRAT-Container* and with the *rat-Type* set to '*geran-ps*';

2> if the *ue-CapabilityRequest* includes '*utra*' and if the UE supports UTRA:

3> include the UE radio access capabilities for UTRA within a *ue-CapabilityRAT-Container* and with the *rat-Type* set to '*utra*';

…

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

[TS 36.331, clause 11.2]

The UE performance requirements for RRC procedures are specified in the following table, by means of a value N:

N = the number of 1ms subframes from the end of reception of the E-UTRAN -> UE message on the UE physical layer up to when the UE shall be ready for the reception of uplink grant for the UE -> E-UTRAN response message with no access delay other than the TTI-alignment (e.g. excluding delays caused by scheduling, the random access procedure or physical layer synchronisation).

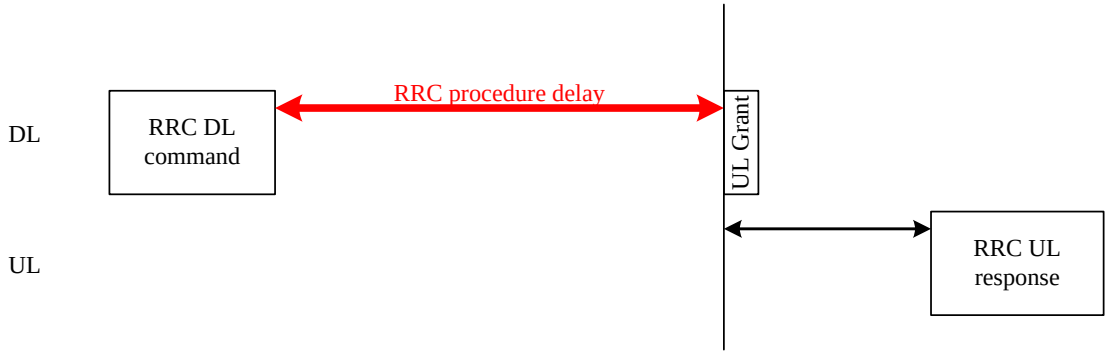

Figure 11.2-1: Illustration of RRC procedure delay

Procedure title:	E-UTRAN -> UE	UE -> E-UTRAN	N	Notes
RRC Connection Control Procedures				
RRC connection establishment	*RRCConnectionSetup*	*RRCConnectionSetupComplete*	15	
RRC connection re-configuration (radio resource configuration)	*RRCConnectionReconfiguration*	*RRCConnectionReconfigurationComplete*	15	
Initial security activation	*SecurityModeCommand*	*SecurityModeCommandComplete/SecurityModeCommandFailure*	10	
Other procedures				
UE capability transfer	*UECapabilityEnquiry*	*UECapabilityInformation*	10	

8.2.1.5.3 Test description

8.2.1.5.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

- The UE is in state Registered, Idle mode (state 2) according to [18].

8.2.1.5.3.2 Test procedure sequence

Table 8.2.1.5.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS sends a *Paging* message to the UE on the appropriate paging block, and including the UE identity in one entry of the IE *pagingRecordList*.	<--	*Paging*	-	-
2	The UE transmits an *RRCConnectionRequest* message.	-->	*RRCConnectionRequest*	-	-
3	The SS transmit an *RRCConnectionSetup* message. (Note 3)	<--	*RRCConnectionSetup*		
4	Check: Does the UE transmit an *RRCConnectionSetupComplete* message within 20 (FDD)/23 (TDD) subframes after successful completion of step 3? (Note 2)	-->	*RRCConnectionSetupComplete*	1	P
5	The SS transmits a *SecurityModeCommand* message to activate AS security. (Note 3)	<--	*SecurityModeCommand*		
6	Check: Does the UE transmit a *SecurityModeComplete* message within 15 (FDD)/18 (TDD) subframes after successful completion of step 5? (Note 2)	-->	*SecurityModeComplete*	2	P
7	The SS transmits an *RRCConnectionReconfiguration* message to establish a data radio bearer. (Note 3)	<--	*RRCConnectionReconfiguration*	-	-
8	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message within 20 (FDD)/23 (TDD) subframes after successful completion of step 7? (Note 2)	-->	*RRCConnectionReconfigurationComplete*	3	P
9	The SS transmits a *UECapabilityEnquiry* message to request UE radio access capability information for E UTRA only. (Note 3)	<--	*UECapabilityEnquiry*	-	-
10	Check: Does the UE transmit a *UECapabilityInformation* message within 15 (FDD)/18 (TDD) subframes after successful completion of step 9? (Note 2)	-->	*UECapabilityInformation*	4	P

Note 1: The SS is configured for RRC procedure delay testing according to TS 36.523-3 clause 7.12.1.
Note 2: 5 (FDD) / 8 (TDD) subframes is added on top of RRC processing delay requirement, because UL grant is allocated for the next subframe after RRC procedure delay and because of transmission delay after UL grant. For TDD, consider the max 7 TTI transmission delay after UL grant.
Note 3: The DL resource allocation sent on PDCCH is big enough to guarantee transmission of all DL RRC PDU in single TTI.

8.2.1.5.3.3 Specific message contents

Table 8.2.1.5.3.3-1: *RRCConnectionRequest* (step 2, Table 8.2.1.5.3.2-1)

Derivation Path: 36.508, Table 4.6.1-16			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionRequest-r8 SEQUENCE {			
establishmentCause	mt-Access		
}			
}			
}			

Table 8.2.1.5.3.3-2: *RRCConnectionSetup* (step 3, Table 8.2.1.5.3.2-1)

Derivation Path: 36.508, Table 4.6.1-17			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionSetup ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
rrcConnectionSetup-r8 SEQUENCE {			
radioResourceConfigDedicated SEQUENCE {			
mac-MainConfig CHOICE {			
timeAlignmentTimerDedicated	Infinity		
}			
}			
}			
}			
}			
}			

Table 8.2.1.5.3.3-3: *RRCConnectionReconfiguration* (step 7, Table 8.2.1.5.3.2-1)

Derivation Path: 36.508 table 4.6.1-8, condition SRB2-DRB(1, 0)			
Information Element	**Value/Remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
RadioResourceConfigDedicated SEQUENCE {			
mac-MainConfig CHOICE {			
drx-Config	Not present		
timeAlignmentTimerDedicated	Infinity		
}			
}			
}			
}			
}			
}			

Table 8.2.1.5.3.3-4: *RRCConnectionReconfiguration* (preamble: Table 4.5.2.3-1 [18], step 14)

Derivation Path: 36.508 table 4.6.1-8, condition SRB2-DRB(1, 0)			
Information Element	**Value/Remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
RadioResourceConfigDedicated SEQUENCE {			
mac-MainConfig CHOICE {			
drx-Config	Not present		
}			
}			
}			
}			
}			
}			

8.2.1.6 RRC connection reconfiguration / Radio bearer establishment for transition from RRC_Idle to RRC CONNECTED / Success / Latency check / SecurityModeCommand and RRCConnectionReconfiguration transmitted in the same TTI

8.2.1.6.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE received SecurityModeCommand message and RRCConnectionReconfiguration message including
a drb-Identity that is not part of the current UE configuration and a nas-DedicatedInformation in
the same TTI and 21 subframes later receives an UL grant }
      then { UE successfully establish the initial AS security activation according to IE
      securityConfigSMC and the radio bearer according to IE radioResourceConfiguration }
                }
```

8.2.1.6.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in : TS 36.331, clause 5.3.4.3, 5.3.5.3 and 11.2.

[TS 36.331, clause 5.3.4.3]

The UE shall:

1> derive the K_{eNB} key, as specified in TS 33.401 [32];

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

1> request lower layers to verify the integrity protection of the *SecurityModeCommand* message, using the algorithm indicated by the *integrityProtAlgorithm* as included in the *SecurityModeCommand* message and the K_{RRCint} key;

1> if the *SecurityModeCommand* message passes the integrity protection check:

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

2> configure lower layers to apply integrity protection using the indicated algorithm and the K_{RRCint} key immediately, i.e. integrity protection shall be applied to all subsequent messages received and sent by the UE, including the *SecurityModeComplete* message;

2> configure lower layers to apply ciphering using the indicated algorithm, the K_{RRCenc} key and the K_{UPenc} key after completing the procedure, i.e. ciphering shall be applied to all subsequent messages received and sent by the UE, except for the *SecurityModeComplete* message which is sent unciphered;

2> consider AS security to be activated;

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

[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 this is the first *RRCConnectionReconfiguration* message after successful completion of the RRC Connection Re-establishment procedure:

…

1> else:

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

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

NOTE 2: If the *RRCConnectionReconfiguration* message includes the establishment of radio bearers other than SRB1, the UE may start using these radio bearers immediately, i.e. there is no need to wait for an outstanding acknowledgment of the *SecurityModeComplete* message.

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

2> forward each element of the *dedicatedInfoNASList* to upper layers;

…

1> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission using the new configuration, upon which the procedure ends;

[TS 36.331, clause 11.2]

The UE performance requirements for RRC procedures are specified in the following table, by means of a value N:

N = the number of 1ms subframes from the end of reception of the E-UTRAN -> UE message on the UE physical layer up to when the UE shall be ready for the reception of uplink grant for the UE -> E-UTRAN response message with no access delay other than the TTI-alignment (e.g. excluding delays caused by scheduling, the random access procedure or physical layer synchronisation).

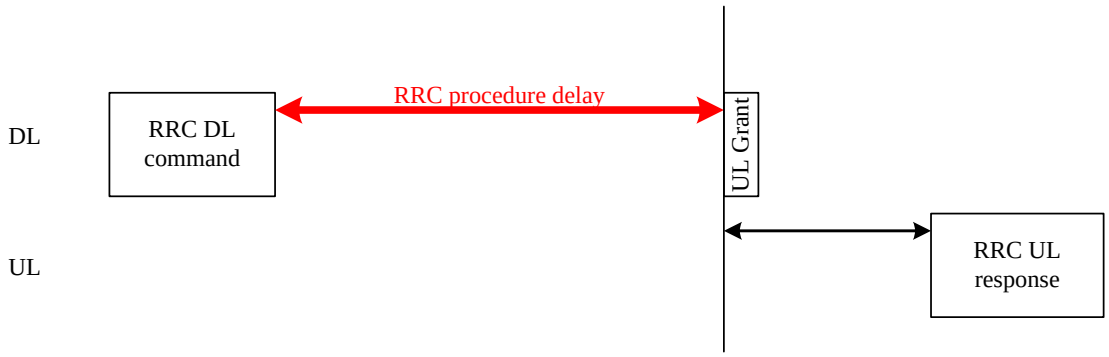

Figure 11.2-1: Illustration of RRC procedure delay

Procedure title:	E-UTRAN -> UE	UE -> E-UTRAN	N	Notes

Procedure title:	E-UTRAN -> UE	UE -> E-UTRAN	N	Notes
RRC Connection Control Procedures				
Initial security activation + RRC connection re-configuration (RB establishment)	*SecurityModeCommand, RRCConnectionReconfiguration*	*RRCConnectionReconfigurationComplete*	20	The two DL messages are transmitted in the same TTI

8.2.1.6.3 Test description

8.2.1.6.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

- The UE is in state Registered, Idle mode (state 2) according to [18].

8.2.1.6.3.2 Test procedure sequence

Table 8.2.1.6.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS sends a *Paging* message to the UE on the appropriate paging block, and including the UE identity in one entry of the IE *pagingRecordList*.	<--	*Paging*	-	-
2	The UE transmits an *RRCConnectionRequest* message.	-->	*RRCConnectionRequest*	-	-
3	The SS transmit an *RRCConnectionSetup* message.	<--	*RRCConnectionSetup*	-	-
4	The UE transmit an *RRCConnectionSetupComplete* message.	-->	*RRCConnectionSetupComplete*	-	-
5	The SS transmits a *SecurityModeCommand* message to activate AS security. (Note 3)	<--	*SecurityModeCommand*	-	-
6	The SS transmits a *RRCConnectionReconfiguration* message to establish a data radio bearer. (Note 3)	<--	*RRCConnectionReconfiguration*	-	-
7	Check: Does the UE transmit an *SecurityModeComplete* message within 25 (FDD)/28 (TDD) subframes after successful completion of step 5? (Note 2)	-->	*SecurityModeComplete*	1	P
8	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message within 25 (FDD)/28 (TDD) subframes after successful completion of step 6? (Note 2)	-->	*RRCConnectionReconfigurationComplete*	1	P

Note 1: The SS is configured for RRC procedure delay testing according to TS 36.523-3 clause 7.12.1.
Note 2: 5 (FDD) / 8 (TDD) subframes is added on top of RRC processing delay requirement, because UL grant is allocated for the next subframe after RRC procedure delay and because of transmission delay after UL grant. For TDD, consider the max 7 TTI transmission delay after UL grant.
Note 3: The DL resource allocation sent on PDCCH is big enough to guarantee transmission of all DL RRC PDU in single TTI.

8.2.1.6.3.3 Specific message contents

Table 8.2.1.6.3.3-1: *RRCConnectionRequest* (step 2, Table 8.2.1.6.3.2-1)

Derivation Path: 36.508, Table 4.6.1-16			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionRequest ::= SEQUENCE {			
criticalExtensions CHOICE {			
rrcConnectionRequest-r8 SEQUENCE {			
establishmentCause	mt-Access		
}			
}			
}			

Table 8.2.1.6.3.3-2: *RRCConnectionSetup* (step 3, Table 8.2.1.6.3.2-1)

Derivation Path: 36.508, Table 4.6.1-17			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionSetup ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE {			
rrcConnectionSetup-r8 SEQUENCE {			
radioResourceConfigDedicated SEQUENCE {			
mac-MainConfig CHOICE {			
timeAlignmentTimerDedicated	Infinity		
}			
}			
}			
}			
}			
}			

Table 8.2.1.6.3.3-3: *RRCConnectionReconfiguration* (step 6, Table 8.2.1.6.3.2-1)

Derivation Path: 36.508 table 4.6.1-8, condition SRB2-DRB(1, 0)			
Information Element	**Value/Remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
RadioResourceConfigDedicated SEQUENCE {			
mac-MainConfig CHOICE {			
drx-Config	Not present		
timeAlignmentTimerDedicated	Infinity		
}			
}			
}			
}			
}			
}			

Table 8.2.1.6.3.3-4: *RRCConnectionReconfiguration* (preamble: Table 4.5.2.3-1 [18], step 14)

Derivation Path: 36.508 table 4.6.1-8, condition SRB2-DRB(1, 0)			
Information Element	**Value/Remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
RadioResourceConfigDedicated SEQUENCE {			
mac-MainConfig CHOICE {			
drx-Config	Not present		
}			
}			
}			
}			
}			
}			

8.2.1.7 RRC connection reconfiguration / Radio bearer establishment / Success / SRB2

8.2.1.7.1 Test Purpose (TP)

```
with { UE in E-UTRA RRC_CONNECTED state without SRB2}
ensure that {
  when { SS sends an RRCConnectionReconfiguration message including SRB2 configuration }
   then { UE successfully establish the signalling radio bearer }
}
```

8.2.1.7.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: 3GPP TS 36.331 clauses 5.3.5.3, and 5.3.10.1.

The following represent an extraction of the requirements relevant to the test purpose.

[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 this is the first *RRCConnectionReconfiguration* message after successful completion of the RRC Connection Re-establishment procedure:

…

1> else:

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

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

NOTE 2: If the *RRCConnectionReconfiguration* message includes the establishment of radio bearers other than SRB1, the UE may start using these radio bearers immediately, i.e. there is no need to wait for an outstanding acknowledgment of the *SecurityModeComplete* message.

…

1> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission using the new configuration, upon which the procedure ends;

[TS 36.331, clause 5.3.10.1]

The UE shall:

1> for each *srb-Identity* value included in the *srb-ToAddModList* that is not part of the current UE configuration (SRB establishment):

2> apply the specified configuration defined in 9.1.2 for the corresponding SRB;

2> establish a PDCP entity and configure it with the current security configuration, if applicable;

2> establish an RLC entity in accordance with the received *rlc-Config*;

2> establish a DCCH logical channel in accordance with the received *logicalChannelConfig* and with the logical channel identity set in accordance with 9.1.2;

8.2.1.7.3 Test description

8.2.1.7.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

- The UE is in state Registered, Idle Mode (State 2) according to [18].

8.2.1.7.3.2 Test procedure sequence

Table 8.2.1.7.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1-7	Generic Radio Bearer Establishment (State 3) step 1 to 7 in TS 36.508 subclause 4.5.3.3.			-	-
8	The SS transmits an *RRCConnectionReconfiguration* message to establish SRB2.	<--	*RRCConnectionReconfiguration*	-	-
9	Check: Does the UE transmits an *RRCConnectionReconfigurationComplete* message?	-->	*RRCConnectionReconfigurationComplete*	1	P
10	Check: Does the test result of CALL generic procedure in TS 36.508 subclause 6.4.2.3 indicates that UE is in E-UTRA RRC_CONNECTED state on Cell 1?	-	-	1	-

8.2.1.7.3.3 Specific message contents

Table 8.2.1.7.3.3-1: *RRCConnectionReconfiguration* (step 8, Table 8.2.1.7.3.2-1))

Derivation Path: 36.508 table 4.6.1-6, condition SRB2-DRB(1, 0)			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
C1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
radioResourceConfigDedicated SEQUENCE {			
srb-ToAddModList SEQUENCE (SIZE (1..2)) OF SEQUENCE {			
srb-ToAddMod[1] SEQUENCE {			
rlc-Config CHOICE {			
explicitValue	RLC-Config-NON-DEFAULT-SRB2		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.2.1.7.3.3-2: RLC-Config-NON-DEFAULT-SRB2 (Table 8.2.1.7.3.3-1))

Derivation Path: 36.331 clauses 6.3.2, 9.2.1.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RLC-Config-NON-DEFAULT-SRB2 ::= CHOICE {			
am SEQUENCE {			
ul-AM-RLC SEQUENCE {			
t-PollRetransmit	ms100		
pollPDU	p16		
pollByte	kb500		
maxRetxThreshold	t6		
}			
dl-AM-RLC SEQUENCE {			
t-Reordering	ms100		
t-StatusProhibit	ms200		
}			
}			
}			

8.2.1.8 RRC connection reconfiguration / Radio bearer establishment / Success / Dedicated bearer / ROHC configured

8.2.1.8.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including IE headerCompression set to
"rohc" }
    then { UE transmits an RRCConnectionReconfigurationComplete message }
           }
```

8.2.1.8.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.5.3, clause 5.3.10.0, clause 5.3.10.3, TS 36.323, clause 5.5.1, 5.5.2 and TS 36.306, clause 4.3.1.1.

[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 this is the first *RRCConnectionReconfiguration* message after successful completion of the RRC Connection Re-establishment procedure:

...

1> else:

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

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

[TS 36.331, clause 5.3.10.0]

The UE shall:

...

1> if the received *radioResourceConfigDedicated* includes the *drb-ToAddModList*:

2> perform DRB addition or reconfiguration as specified in 5.3.10.3;

[TS 36.331, clause 5.3.10.3]

The UE shall:

1> for each *drb-Identity* value included in the *drb-ToAddModList* that is not part of the current UE configuration (DRB establishment including the case when full configuration option is used):

2> establish a PDCP entity and configure it with the current security configuration and in accordance with the received *pdcp-Config*;

[TS 36.323, clause 5.5.1]

The header compression protocol is based on the Robust Header Compression (ROHC) framework [7]. There are multiple header compression algorithms, called profiles, defined for the ROHC framework. Each profile is specific to the particular network layer, transport layer or upper layer protocol combination e.g. TCP/IP and RTP/UDP/IP.

The detailed definition of the ROHC channel is specified as part of the ROHC framework in RFC 4995 [7]. This includes how to multiplex different flows (header compressed or not) over the ROHC channel, as well as how to associate a specific IP flow with a specific context state during initialization of the compression algorithm for that flow.

The implementation of the functionality of the ROHC framework and of the functionality of the supported header compression profiles is not covered in this specification.

In this version of the specification the support of the following profiles is described:

Table 5.5.1.1: Supported header compression protocols and profiles

Profile Identifier	Usage:	Reference
0x0000	No compression	RFC 4995
0x0001	RTP/UDP/IP	RFC 3095, RFC 4815
0x0002	UDP/IP	RFC 3095, RFC 4815
0x0003	ESP/IP	RFC 3095, RFC 4815
0x0004	IP	RFC 3843, RFC 4815
0x0006	TCP/IP	RFC 4996
0x0101	RTP/UDP/IP	RFC 5225
0x0102	UDP/IP	RFC 5225
0x0103	ESP/IP	RFC 5225
0x0104	IP	RFC 5225

[TS 36.323, clause 5.5.2]

PDCP entities associated with DRBs can be configured by upper layers [3] to use header compression.

[TS 36.306, clause 4.3.1.1]

This field defines which ROHC profiles from the list below are supported by the UE.

- 0x0000 ROHC uncompressed (RFC 4995)
- 0x0001 ROHC RTP (RFC 3095, RFC 4815)
- 0x0002 ROHC UDP (RFC 3095, RFC 4815)

...

'IMS capable UEs supporting voice' shall support ROHC profiles 0x0000, 0x0001, 0x0002 and be able to compress and decompress headers of PDCP SDUs at a PDCP SDU rate corresponding to supported IMS voice codecs.

8.2.1.8.3 Test description

8.2.1.8.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

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

8.2.1.8.3.2 Test procedure sequence

Table 8.2.1.8.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to establish a data radio bearer.	<--	*RRCConnectionReconfiguration*	-	-
2	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message?	-->	*RRCConnectionReconfigurationComplete*	1	P
3	The UE transmits an *ULInformationTransfer* message. This message includes an ACTIVATE DEDICATED EPS BEARER CONTEXT ACCEPT message.	-->	*ULInformationTransfer*	-	-
4	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?	-	-	1	-

8.2.1.8.3.3 Specific message contents

Table 8.2.1.8.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.1.8.3.2-1)

Derivation Path: TS 36.508 Table 4.6.1-8, condition DRB(0, 1)			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
dedicatedInfoNASList SEQUENCE	1 entry		

(SIZE(1..maxDRB)) OF			
DedicatedInfoNAS[1]	ACTIVATE DEDICATED EPS BEARER CONTEXT REQUEST with EPS bearer identity corresponding to drb-Identity 2	According 36.508 table 4.7.3-3	
}			
}			
}			
}			

Table 8.2.1.8.3.3-2: PDCP-Config (Table 8.2.1.8.3.3-1)

Derivation Path: TS 36.508 Table 4.8.2.1.2.1-1			
Information Element	**Value/remark**	**Comment**	**Condition**
PDCP-Config-DRB-UM ::= SEQUENCE {			
rlc-UM SEQUENCE {			
pdcp-SN-Size	len7bits		
}			
headerCompression CHOICE {			
rohc SEQUENCE {			
maxCID	15	DEFAULT 15	
profiles SEQUENCE {		IMS capable UEs supporting voice shall support ROHC profiles 0x0000, 0x0001, 0x0002.	
profile0x0001	TRUE		
profile0x0002	TRUE		
profile0x0003	FALSE		
profile0x0004	FALSE		
profile0x0006	FALSE		
profile0x0101	FALSE		
profile0x0102	FALSE		
profile0x0103	FALSE		
profile0x0104	FALSE		
}			
}			
}			
}			

Table 8.2.1.8.3.3-3: RLC-Config (Table 8.2.1.8.3.3-1)

Derivation Path: TS 36.508 Table 4.8.2.1.3.1-1			
Information Element	**Value/remark**	**Comment**	**Condition**
RLC-Config-DRB-UM ::= CHOICE {			
um-Bi-Directional SEQUENCE {			
ul-UM-RLC SEQUENCE {			
sn-FieldLength	size5		
}			
dl-UM-RLC SEQUENCE {			
sn-FieldLength	size5		
}			
}			
}			

8.2.2 Radio resource reconfiguration

8.2.2.1 RRC connection reconfiguration / Radio resource reconfiguration / Success

8.2.2.1.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a
radioResourceConfigDedicated with SRB, DRB, transport channel and physical channel reconfiguration }
    then { UE reconfigures the data and signalling radio bearers and sends an
RRCConnectionReconfigurationComplete message }
            }
```

8.2.2.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331 clause 5.3.5.3, 5.3.10.1, 5.3.10.3, 5.3.10.4 and 5.3.10.6.

The following represent an extraction of the requirements relevant to the test purpose.

[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 this is the first *RRCConnectionReconfiguration* message after successful completion of the RRC Connection Re-establishment procedure:

…

1> else:

2> If the *RRCConnectionReconfiguration* message includes the *radioResourceConfigDedicated*:

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

…

1> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission using the new configuration, upon which the procedure ends;

[TS 36.331, clause 5.3.10.1]

The UE shall:

…

1> for each *srb-Identity* value included in the *srb-ToAddModList* that is part of the current UE configuration (SRB reconfiguration):

2> reconfigure the RLC entity in accordance with the received *rlc-Config*;

2> reconfigure the DCCH logical channel in accordance with the received *logicalChannelConfig*;

[TS 36.331, clause 5.3.10.3]

…

1> for each *drb-Identity* value included in the *drb-ToAddModList* that is part of the current UE configuration (DRB reconfiguration):

2> if the *pdcp-Config* is included:

3> reconfigure the PDCP entity in accordance with the received *pdcp-Config*;

2> if the *rlc-Config* is included:

3> reconfigure the RLC entity or entities in accordance with the received *rlc-Config*;

2> if the *logicalChannelConfig* is included:

3> reconfigure the DTCH logical channel in accordance with the received *logicalChannelConfig*;

NOTE: Removal and addition of the same *drb-Identity* in single *radioResourceConfiguration* is not supported.

[TS 36.331, clause 5.3.10.4]

1> reconfigure the MAC main configuration in accordance with the received *mac-MainConfig*;

[TS 36.331, clause 5.3.10.6]

The UE shall:

1> reconfigure the physical channel configuration in accordance with the received *physicalConfigDedicated*;

8.2.2.1.3 Test description

8.2.2.1.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) according to [18].
- The condition SRB2-DRB(2, 0) is used for step 8 in 4.5.3.3 according to [18].

8.2.2.1.3.2 Test procedure sequence

Table 8.2.2.1.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message containing a *radioResourceConfigDedicated* with SRBs, DRB, transport channel and physical channel reconfiguration.	<--	*RRCConnectionReconfiguration*	-	-
2	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message?	-->	*RRCConnectionReconfigurationComplete*	1	P
3	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	-

8.2.2.1.3.3 Specific message contents

Table 8.2.2.1.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.2.1.3.2-1)

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-RECONFIG		
}			
}			
}			
}			

Table 8.2.2.1.3.3-2: *RadioResourceConfigDedicated-RECONFIG* (Table 8.2.2.1.3.3-1)

Derivation Path: 36.331 clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated ::= SEQUENCE {			
srb-ToAddModList	SRB-ToAddModList-RECONFIG	TS 36.508 Table 4.6.3-22A	
drb-ToAddModList	DRB-ToAddModList-RECONFIG	TS 36.508 Table 4.6.3-2A	
drb-ToReleaseList	Not present		
mac-MainConfig CHOICE {			
explicitValue	MAC-MainConfig-RECONFIG		
}			
sps-Config	Not present		
physicalConfigDedicated	PhysicalConfigDedicated-RECONFIG		
}			

Table 8.2.2.1.3.3-3: *MAC-MainConfig-RECONFIG* (Table 8.2.2.1.3.3-2)

Derivation Path: 36.508 table 4.8.2.1.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MAC-MainConfig ::= SEQUENCE {			
ul-SCH-Config SEQUENCE {			
periodicBSR-Timer	sf32		
retxBSR-Timer	sf2560		
}			
phr-Config CHOICE {			
setup SEQUENCE {			
periodicPHR-Timer	sf1000		
prohibitPHR-Timer	sf500		
}			
}			
}			

Table 8.2.2.1.3.3-4: *PhysicalConfigDedicated-RECONFIG* (Table 8.2.2.1.3.3-2)

Derivation Path: 36.331 clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
PhysicalConfigDedicated ::= SEQUENCE {			
pdsch-ConfigDedicated	PDSCH-ConfigDedicated-RECONFIG		
pucch-ConfigDedicated	Not present		
pusch-ConfigDedicated	Not present		
uplinkPowerControlDedicated	Not present		
tpc-PDCCH-ConfigPUCCH	Not present		
tpc-PDCCH-ConfigPUSCH	Not present		
cqi-ReportConfig	Not present		
soundingRsUL-ConfigDedicated	Not present		
antennaInfo CHOICE {			
defaultValue	NULL		
}			
schedulingRequestConfig	Not present		
}			

Table 8.2.2.1.3.3-5: *PDSCH-ConfigDedicated-RECONFIG* (Table 8.2.2.1.3.3-4)

Derivation Path: 36.508 table 4.6.3-6			
Information Element	**Value/remark**	**Comment**	**Condition**
PDSCH-ConfigDedicated ::= SEQUENCE {			
p-a	dB1		
}			

8.2.2.2 RRC connection reconfiguration / SRB/DRB reconfiguration / Success

8.2.2.2.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state}
ensure that {
  when { UE receives an RRCConnectionReconfiguration message containing SRB reconfiguration }
    then { UE reconfigures affected SRBs and sends an RRCConnectionReconfigurationComplete message }
          }
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state}
ensure that {
  when { UE receives an RRCConnectionReconfiguration message containing DRB reconfiguration }
    then { UE reconfigures affected DRBs and sends an RRCConnectionReconfigurationComplete message }
          }
```

8.2.2.2.2 Conformance requirements

References: The conformance requirements covered in the current TC is specified in: TS 36.331, clauses 5.3.5.3, 5.3.10.1 and 5.3.10.3.

[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> else:

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

3>perform the Radio resource configuration procedure as specified in 5.3.10;

[TS 36.331, clause 5.3.10.1]

The UE shall:

…

1> for each *srb-Identity* value included in the *srb-ToAddModList* that is part of the current UE configuration (SRB reconfiguration):

2> reconfigure the RLC entity in accordance with the received *rlc-Config*;

2> reconfigure the DCCH logical channel in accordance with the received *logicalChannelConfig*;

[TS 36.331, clause 5.3.10.3]

The UE shall:

…

1> for each *drb-Identity* value included in the *drb-ToAddModList* that is part of the current UE configuration (DRB reconfiguration):

2> if the *pdcp-Config* is included:

3> reconfigure the PDCP entity in accordance with the received *pdcp-Config*;

2> if the *rlc-Config* is included:

3> reconfigure the RLC entity or entities in accordance with the received *rlc-Config*;

2> if the *logicalChannelConfig* is included:

3> reconfigure the DTCH logical channel in accordance with the received *logicalChannelConfig*;

NOTE: Removal and addition of the same *drb-Identity* in single *radioResourceConfiguration* is not supported.

8.2.2.2.3 Test Description

8.2.2.2.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) according to [18].
- The condition SRB2-DRB(2, 0) is used for step 8 in 4.5.3.3 according to [8].

8.2.2.2.3.2 Test procedure sequence

Table 8.2.2.2.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRConnectionReconfiguration* message containing a *radioResourceConfigDedicated* with SRB reconfiguration.	<--	*RRCConnectionReconfiguration*	-	-
2	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message?	-->	*RRCConnectionReconfigurationComplete*	1	P
3	SS transmits *RRCConnectionReconfiguration* message containing a *radioResourceConfigDedicated* with DRB reconfiguration.	<--	*RRCConnectionReconfiguration*	-	-
4	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message?	-->	*RRCConnectionReconfigurationComplete*	2	P

8.2.2.2.3.3 Specific message contents

Table 8.2.2.2.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.2.2.3.2-1)

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-SRBRECONFIG		
}			
}			
}			
}			

Table 8.2.2.2.3.3-2: *RadioResourceConfigDedicated-SRBRECONFIG* (Table 8.2.2.2.3.3-1)

Derivation Path: 36.331 clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated ::= SEQUENCE {			
srb-ToAddModList	SRB-ToAddModList-RECONFIG	TS 36.508 Table 4.6.3-22A	
drb-ToAddModList	Not present		
drb-ToReleaseList	Not present		
mac-MainConfig	Not present		
sps-Config	Not present		
physicalConfigDedicated	Not present		
}			

Table 8.2.2.2.3.3-3: *RRCConnectionReconfiguration* (step 3, Table 8.2.2.2.3.2-1)

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-DRBRECONFIG		
}			
}			
}			
}			

Table 8.2.2.2.3.3-4: *RadioResourceConfigDedicated-DRBRECONFIG* (Table 8.2.2.2.3.3-3)

Derivation Path: 36.331 clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicated ::= SEQUENCE {			
srb-ToAddModList	Not present		
drb-ToAddModList	DRB-ToAddModList-RECONFIG	TS 36.508 Table 4.6.3-2A	
drb-ToReleaseList	Not present		
mac-MainConfig	Not present		
sps-Config	Not present		
physicalConfigDedicated	Not present		
}			

Table 8.2.2.2.3.3-5: Void

Table 8.2.2.2.3.3-6: Void

8.2.2.3 CA / RRC connection reconfiguration / SCell addition/modification/release / Success

8.2.2.3.1 CA / RRC connection reconfiguration / SCell addition/modification/release / Success / Intra-band Contiguous CA

8.2.2.3.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message containing sCellToAddModList with a
SCell addition }
    then { UE adds the new SCell, configures lower layers to consider the SCell to be in deactivated
state and sends an RRCConnectionReconfigurationComplete message }
            }
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message containing sCellToAddModList with SCell
modification }
    then { UE modifies the affected SCell dedicated configurations and sends an
RRCConnectionReconfigurationComplete message }
            }
```

(3)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
```

```
  when { UE receives an RRCConnectionReconfiguration message containing sCellToReleaseList with a
sCellIndex equling to one of the current UE SCell configuration }
    then { UE releases this SCell and sends an RRCConnectionReconfigurationComplete message }
          }
```

8.2.2.3.1.2 Conformance requirements

References: The conformance requirements covered in the current TC is specified in: TS 36.331, clauses 5.3.5.3, 5.3.10.3a and 5.3.10.3b

[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> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission using the new configuration, upon which the procedure ends;

[TS 36.331, clause 5.3.10.3a]

The UE shall:

1> if the release is triggered by reception of the *sCellToReleaseList*:

2> for each *sCellIndex* value included in the *sCellToReleaseList*:

3> if the current UE configuration includes an SCell with value *sCellIndex*:

4> release the SCell;

1> if the release is triggered by RRC connection re-establishment:

2> release all SCells that are part of the current UE configuration;

[TS 36.331, clause 5.3.10.3b]

The UE shall:

1> for each *sCellIndex* value included in the *sCellToAddModList* that is not part of the current UE configuration (SCell addition):

2> add the SCell, corresponding to the *cellIdentification*, in accordance with the received *radioResourceConfigCommonSCell* and *radioResourceConfigDedicatedSCell*;

2> configure lower layers to consider the SCell to be in deactivated state;

1> for each *sCellIndex* value included in the *sCellToAddModList* that is part of the current UE configuration (SCell modification):

2> modify the SCell configuration in accordance with the received *radioResourceConfigDedicatedSCell*;

8.2.2.3.1.3 Test Description

8.2.2.3.1.3.1 Pre-test conditions

System Simulator:

- Cell 1 is the PCell, Cell3 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].

8.2.2.3.1.3.2 Test procedure sequence

Table 8.2.2.3.1.3.2-1 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 the configuration marked "T1" and "T2" are applied at the point indicated in the Main behaviour description in Table 8.2.2.3.1.3.2-2.

Table 8.2.2.3.1.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 3	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-79	Off	The power level values are such that camping on Cell 1 is guarantee.
T1	Cell-specific RS EPRE	dBm/15kHz	-79	-85	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).
T2	Cell-specific RS EPRE	dBm/15kHz	-79	-97	The power level values are such that measurement results for Cell 1 (M1) and Cell 3 (M3) satisfy the leave condition for event A3 (M3 < M1).

Table 8.2.2.3.1.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to setup inter Frequency measurement.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 3 parameters according to the row "T1" in table 8.2.2.3.1.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP, RSRQ value for Cell 3.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message containing an *sCellToAddModList* with SCell Cell 3 addition.	<--	*RRCConnectionReconfiguration*	-	-
6	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message?	-->	*RRCConnectionReconfigurationComplete*	1	P
7	The SS transmits an *RRCConnectionReconfiguration* message containing an *sCellToAddModList* with SCell Cell 3 modification and including *measConfig* to release measurement gap.	<--	*RRCConnectionReconfiguration*	-	-
8	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message?	-->	*RRCConnectionReconfigurationComplete*	2	P
9	The SS changes Cell 3 parameters according to the row "T2" in table 8.2.2.3.1.3.2-1.	-	-	-	-
10	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP, RSRQ value for Cell 3.	-->	*MeasurementReport*	-	-
11	The SS transmits an *RRCConnectionReconfiguration* message containing an *sCellToReleaseList* with an *sCellIndex* equalling to the Cell 3 cell index in the current UE configuration.	<--	*RRCConnectionReconfiguration*	-	-
12	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message?	-->	*RRCConnectionReconfigurationComplete*	3	P
13	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	-

8.2.2.3.1.3.3 Specific message contents

Table 8.2.2.3.1.3.3-0: Conditions for specific message contents in Tables 8.2.2.3.1.3.3-7, 8.2.2.3.1.3.3-8 and 8.2.2.3.1.3.3-11

Condition	Explanation
Uplink_CA	The UE supports carrier aggregation in UL under the test band.

Table 8.2.2.3.1.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.2.3.1.3.2-2)

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

Table 8.2.2.3.1.3.3-2: *MeasConfig* (Table 8.2.2.3.1.3.3-1)

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)	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-A3		
reportConfig[1]	ReportConfig-A3		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f2		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

Table 8.2.2.3.1.3.3-3: *ReportConfig-A3* (step 1, Table 8.2.2.3.1.3.2-2)

Derivation Path: 36.508 clause 4.6.6 table 4.6.6-6			
Information Element	**Value/remark**	**Comment**	**Condition**
ReportConfigEUTRA-A3 ::= SEQUENCE {			
triggerType CHOICE {			
event SEQUENCE {			
eventId CHOICE {			
eventA SEQUENCE {			
a3-Offset	-24 (-12 dB)		
reportOnLeave	TRUE		
}			
}			
}			
}			
}			

Table 8.2.2.3.1.3.3-4: *MeasurementReport* (step 4, Table 8.2.2.3.1.3.2-2)

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		
measResultPCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {		Report Cell 3	
physCellId [1]	physicalCellId of Cell 3		
cgi-Info [1] SEQUENCE {}	Not present		
measResult [1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
additionalSI-Info-r9 SEQUENCE {}	Not present		
}			
}			
}			
measResultForECID-r9 SEQUENCE {}	Not present		
locationInfo-r10 SEQUENCE {}	Not present		
measResultServFreqList-r10 SEQUENCE {}	Not present		
}			
}			
}			
}			
}			

Table 8.2.2.3.1.3.3-5: *RRCConnectionReconfiguration* (step 5, Table 8.2.2.3.1.3.2-2)

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-Add	SCell addition for Cell 3	
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			
}			
}			
}			
}			

Table 8.2.2.3.1.3.3-6: SCellToAddMod-r10-f2-Add (Table 8.2.2.3.1.3.3-5)

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		
radioResourceConfigDedicatedSCell-r10	RadioResourceConfigDedicatedSCell-r10-f2		
}			

Table 8.2.2.3.1.3.3-7: *RadioResourceConfigCommonSCell-r10-f2* (Table 8.2.2.3.1.3.3-6)

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		
}			
Ul-Configuration-r10	Not present		
ul-Configuration-r10 SEQUENCE {			Uplink_CA
ul-FreqInfo-r10 SEQUENCE {			
ul-CarrierFreq-r10	Same uplink EARFCN as used for Cell 3	OP	FDD
	Not present		TDD
ul-Bandwidth-r10	Same uplink system bandwidth as used for Cell 3	optional	FDD
	Not present		TDD
additionalSpectrumEmissionSCell-r10	Same additionalSpectrumEmission as used for Cell 3		
}			
}			
}			

Table 8.2.2.3.1.3.3-8: *RadioResourceConfigDedicatedSCell-r10-f2* (Table 8.2.2.3.1.3.3-6)

Derivation Path: 36.508 clause 4.6.3 table 4.6.3-19AA			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicatedSCell-r10 ::= SEQUENCE {			
physicalConfigDedicatedSCell-r10 SEQUENCE {			
ul-Configuration-r10	Not present		
ul-Configuration-r10 SEQUENCE {			Uplink_CA
antennaInfoUL-r10	Not present		
pusch-ConfigDedicatedSCell-r10	Not present		
uplinkPowerControlDedicatedSCell-r10	UplinkPowerControlDedicatedSCell-r10-DEFAULT		
cqi-ReportConfigSCell-r10	CQI-ReportConfigSCell-r10-DEFAULT		
soundingRS-UL-ConfigDedicated-r10	Not present		
soundingRS-UL-ConfigDedicated-v1020	Not present		
soundingRS-UL-ConfigDedicatedAperiodic-r10	Not present		
}			
}			
}			

Table 8.2.2.3.1.3.3-9: *RRCConnectionReconfiguration* (step 7, Table 8.2.2.3.1.3.2-2)

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 {			
measConfig SEQUENCE {			
measGapConfig CHOICE {			
release	NULL		
}			
}			
nonCriticalExtension SEQUENCE {			
nonCriticalExtension SEQUENCE {			
nonCriticalExtension SEQUENCE {			
sCellToReleaseList-r10	Not present		
sCellToAddModList-r10	SCellToAddMod-r10-f2-Mod	SCell modification for Cell 3	
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			
}			
}			
}			

Table 8.2.2.3.1.3.3-10: SCellToAddMod-r10-f2-Mod (Table 8.2.2.3.1.3.3-9)

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	Not present		
radioResourceConfigDedicatedSCell-r10	RadioResourceConfigDedicatedSCell-r10-f2-Mod		pc_FeatrGrp_102
}			

Table 8.2.2.3.1.3.3-11: *RadioResourceConfigDedicatedSCell-r10-f2-Mod* (Table 8.2.2.3.1.3.3-10)

Derivation Path: 36.508 clause 4.6.3 table 4.6.3-19AA			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicatedSCell-r10 ::= SEQUENCE {			
physicalConfigDedicatedSCell-r10 SEQUENCE {			
nonUL-Configuration-r10 SEQUENCE {			
antennaInfo-r10 SEQUENCE {			
antennaPortsCount	an2		
}			
crossCarrierSchedulingConfig-r10	Not present		
csi-RS-Config-r10	Not present		
pdsch-ConfigDedicated-r10	Not present		
}			
ul-Configuration-r10	Not present		
ul-Configuration-r10 SEQUENCE {			Uplink_CA
antennaInfoUL-r10 SEQUENCE {			
transmissionModeUL-r10	tm1		
fourAntennaPortActivated-r10	Not present	OP setup	
}			
pusch-ConfigDedicatedSCell-r10	PUSCH-ConfigDedicated-DEFAULT		
uplinkPowerControlDedicatedSCell-r10	Not present		
cqi-ReportConfigSCell-r10	Not present		
soundingRS-UL-ConfigDedicated-r10	Not present		
	SoundingRS-UL-ConfigDedicated-Mod		pc_FeatrGrp_113
soundingRS-UL-ConfigDedicated-v1020	Not present		
	SoundingRS-UL-ConfigDedicated-v1020-Mod		pc_FeatrGrp_113
soundingRS-UL-ConfigDedicatedAperiodic-r10	Not present		
}			
}			
}			

Table 8.2.2.3.1.3.3-11A: *SoundingRS-UL-ConfigDedicated-Mod* (Table 8.2.2.3.1.3.3-11)

Derivation Path: 36.508, Table 4.6.3-22			
Information Element	**Value/remark**	**Comment**	**Condition**
SoundingRS-UL-ConfigDedicated ::= CHOICE{			
setup SEQUENCE {			
srs-Bandwidth	bw3		
srs-HoppingBandwidth	hbw3		
freqDomainPosition	0		
duration	TRUE		
srs-ConfigIndex	7		
transmissionComb	0		
cyclicShift	cs0		
}			
}			

Table 8.2.2.3.1.3.3-11B: *SoundingRS-UL-ConfigDedicated-v1020-Mod* (Table 8.2.2.3.1.3.3-11)

Derivation Path: 36.331, clause 6.3.2			
Information Element	**Value/remark**	**Comment**	**Condition**
SoundingRS-UL-ConfigDedicated-v1020 ::= SEQUENCE {			
srs-AntennaPort-r10	an1		
}			

Table 8.2.2.3.1.3.3-12: *MeasurementReport* (step 10, Table 8.2.2.3.1.3.2-2)

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		
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 8.2.2.3.1.3.3-13: *RRCConnectionReconfiguration* (step 11, Table 8.2.2.3.1.3.2-2)

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		
}			
}			
}			
}			
}			
}			
}			

8.2.2.3.2 CA / RRC connection reconfiguration / SCell addition/modification/release / Success / Inter-Band CA

8.2.2.3.2.1 Test Purpose (TP)

Same as TC 8.2.2.3.1 but applied to Inter-band CA case.

8.2.2.3.2.2 Conformance requirements

Same as TC 8.2.2.3.1 but applied to Inter-band CA case.

8.2.2.3.2.3 Test description

8.2.2.3.2.3.1 Pre-test conditions

Same as test case 8.2.2.3.1 with the following differences:

- CA configuration: Inter-band CA replaces Intra-band Contiguous CA
- Cells configuration: Cell 10 replaces Cell 3
- Cell 10 is an Inactive SCell according to [18] cl. 6.3.4

8.2.2.3.2.3.2 Test procedure sequence

Same as test case 8.2.2.3.1 with the following differences:

- CA configuration: Inter-band CA replaces Inter-band Contiguous CA
- Cells configuration: Cell 10 replaces Cell 3.

8.2.2.3.2.3.3 Specific message contents

Table 8.2.2.3.2.3.3-1: *MeasConfig* (Table 8.2.2.3.1.3.3-1)

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)	Cell 1	
measObjectId[2]	IdMeasObject-f5		
measObject[2]	MeasObjectEUTRA-GENERIC(f5)	Cell 10	
}			
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-f5		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

8.2.2.4 CA / RRC connection reconfiguration / SCell SI change / Success

8.2.2.4.1 CA / RRC connection reconfiguration / SCell SI change / Success / Intra-band Contiguous CA

8.2.2.4.1.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state with SCell(s) configured }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including sCellToReleaseList and
sCellToAddModList with the same concerned SCell to release and add, and with the change of the
relevant system information of the configured SCell }
    then { UE first releases the concerned SCell and then adds the concerned SCell, configures lower
layers to consider the concerned SCell to be in deactivated state and sends an
RRCConnectionReconfigurationComplete message }
            }
```

8.2.2.4.1.2 Conformance requirements

References: The conformance requirements covered in the current TC is specified in: TS 36.331, clauses 5.2.1.1, clauses 5.3.5.3, 5.3.10.3a and 5.3.10.3b.

[TS 36.331, clause 5.2.1.1]

The UE applies the system information acquisition and change monitoring procedures for the PCell only. For an SCell, E-UTRAN provides, via dedicated signalling, all system information relevant for operation in RRC_CONNECTED when adding the SCell. Upon change of the relevant system information of a configured SCell, E-UTRAN releases and subsequently adds the concerned SCell, which may be done with a single *RRCConnectionReconfiguration* message.

NOTE 2: E-UTRAN may configure via dedicated signalling different parameter values than the ones broadcast in the concerned SCell.

[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> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission using the new configuration, upon which the procedure ends;

[TS 36.331, clause 5.3.10.3a]

The UE shall:

1> if the release is triggered by reception of the *sCellToReleaseList*:

2> for each *sCellIndex* value included in the *sCellToReleaseList*:

3> if the current UE configuration includes an SCell with value *sCellIndex*:

4> release the SCell;

1> if the release is triggered by RRC connection re-establishment:

2> release all SCells that are part of the current UE configuration;

[TS 36.331, clause 5.3.10.3b]

The UE shall:

1> for each *sCellIndex* value included in the *sCellToAddModList* that is not part of the current UE configuration (SCell addition):

2> add the SCell, corresponding to the *cellIdentification*, in accordance with the received *radioResourceConfigCommonSCell* and *radioResourceConfigDedicatedSCell*;

2> configure lower layers to consider the SCell to be in deactivated state;

1> for each *sCellIndex* value included in the *sCellToAddModList* that is part of the current UE configuration (SCell modification):

2> modify the SCell configuration in accordance with the received *radioResourceConfigDedicatedSCell*;

8.2.2.4.1.3 Test Description

8.2.2.4.1.3.1 Pre-test conditions

System Simulator:

- Cell 1 is the PCell, 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].

8.2.2.4.1.3.2 Test procedure sequence

Table 8.2.2.4.1.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message containing a *sCellToAddModList* with Cell 3 as SCell addition.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS transmits an *RRCConnectionReconfiguration* message containing a *sCellToReleaseList* with a SCell release and a *sCellToAddModList* with a SCell addition for SCell relevant system information changes, the SCellIndex-r10 in both IEs indicate the same SCell as configured in step 1.	<--	*RRCConnectionReconfiguration*	-	-
4	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message?	-->	*RRCConnectionReconfigurationComplete*	1	P

8.2.2.4.1.3.3 Specific message contents

Table 8.2.2.4.1.3.3-0: Conditions for specific message contents in Tables 8.2.2.4.1.3.3-3, 8.2.2.4.1.3.3-4 and 8.2.2.4.1.3.3-7

Condition	Explanation
Uplink_CA	The UE supports carrier aggregation in UL under the test band.

Table 8.2.2.4.1.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.2.4.1.3.2-1)

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-Add	SCell addition for Cell 3	
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			
}			
}			
}			
}			

Table 8.2.2.4.1.3.3-2: *SCellToAddMod-r10-f2-Add* (Table 8.2.2.4.1.3.3-1)

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		
radioResourceConfigDedicatedSCell-r10	RadioResourceConfigDedicatedSCell-r10-f2		
}			

Table 8.2.2.4.1.3.3-3: *RadioResourceConfigCommonSCell-r10-f2* (Table 8.2.2.4.1.3.3-2)

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		
}			
ul-Configuration-r10	Not present		
ul-Configuration-r10 SEQUENCE {			Uplink_CA
ul-FreqInfo-r10 SEQUENCE {			
ul-CarrierFreq-r10	Same uplink EARFCN as used for Cell 3		FDD
	Not present		TDD
ul-Bandwidth-r10	Same uplink system bandwidth as used for Cell 3	optional	FDD
	Not present		TDD
additionalSpectrumEmissionSCell-r10	Same additionalSpectrumEmission as used for Cell 3		
}			
}			
}			

Table 8.2.2.4.1.3.3-4: *RadioResourceConfigDedicatedSCell-r10-f2* (Table 8.2.2.4.1.3.3-2)

Derivation Path: 36.508 clause 4.6.3 table 4.6.3-19AA			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicatedSCell-r10 ::= SEQUENCE {			
physicalConfigDedicatedSCell-r10 SEQUENCE {			
ul-Configuration-r10	Not present		
ul-Configuration-r10 SEQUENCE {			Uplink_CA
antennaInfoUL-r10	Not present		
pusch-ConfigDedicatedSCell-r10	Not present		
uplinkPowerControlDedicatedSCell-r10	UplinkPowerControlDedicatedSCell-r10-DEFAULT		
cqi-ReportConfigSCell-r10	CQI-ReportConfigSCell-r10-DEFAULT		
soundingRS-UL-ConfigDedicated-r10	Not present		
soundingRS-UL-ConfigDedicated-v1020	Not present		
soundingRS-UL-ConfigDedicatedAperiodic-r10	Not present		
}			
}			
}			

Table 8.2.2.4.1.3.3-5: *RRCConnectionReconfiguration* (step 3, Table 8.2.2.4.1.3.2-2)

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	SCellToAddMod-r10-f2-Add-SIchange	SCell addition for Cell 3	
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			
}			
}			
}			
}			

Table 8.2.2.4.1.3.3-6: *SCellToAddMod-r10-f2-Add-SIchange* (Table 8.2.2.4.1.3.3-5)

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-SIchange		
}			

Table 8.2.2.4.1.3.3-7: *RadioResourceConfigCommonSCell-r10-f2-SIchange* (Table 8.2.2.4.1.3.3-6)

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		
antennaInfoCommon-r10 SEQUENCE {			
antennaPortsCount	an1		
}			
}			
ul-Configuration-r10	Not present		
ul-Configuration-r10 SEQUENCE {			Uplink_CA
ul-FreqInfo-r10 SEQUENCE {			
ul-CarrierFreq-r10	Same uplink EARFCN as used for Cell 3		FDD
	Not present		TDD
ul-Bandwidth-r10	Same uplink system bandwidth as used for Cell 3	optional	FDD
	Not present		TDD
additionalSpectrumEmissionSCell-r10	Same additionalSpectrumEmission as used for Cell 3		
}			
}			
}			

8.2.2.4.2 CA / RRC connection reconfiguration / SCell SI change / Success / Inter-Band CA

The scope and description of the present TC is the same as test case 8.2.2.4.1 with the following differences:

- CA configuration: Inter-band CA replaces Intra-band Contiguous CA
- Cells configuration: Cell 10 replaces Cell 3
- Cell 10 is an Inactive SCell according to [18] cl. 6.3.4

8.2.2.5 CA / RRC connection reconfiguration / SCell addition without UL / Success

8.2.2.5.1 CA / RRC connection reconfiguration / SCell addition without UL / Success / Intra-band Contiguous CA

8.2.2.5.1.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message containing sCellToAddModList with SCell
addition without UL carrier }
    then { UE adds the new SCell and sends an RRCConnectionReconfigurationComplete message }
           }
```

8.2.2.5.1.2 Conformance requirements

References: The conformance requirements covered in the current TC is specified in: TS 36.331, clauses 5.3.5.3, 5.3.10.3b.

[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> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission using the new configuration, upon which the procedure ends;

[TS 36.331, clause 5.3.10.3b]

The UE shall:

1> for each *sCellIndex* value included in the *sCellToAddModList* that is not part of the current UE configuration (SCell addition):

2> add the SCell, corresponding to the *cellIdentification*, in accordance with the received *radioResourceConfigCommonSCell* and *radioResourceConfigDedicatedSCell*;

2> configure lower layers to consider the SCell to be in deactivated state;

1> for each *sCellIndex* value included in the *sCellToAddModList* that is part of the current UE configuration (SCell modification):

2> modify the SCell configuration in accordance with the received *radioResourceConfigDedicatedSCell*;

8.2.2.5.1.3 Test Description

8.2.2.5.1.3.1 Pre-test conditions

System Simulator:

- Cell 1 is the PCell, 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].

8.2.2.5.1.3.2 Test procedure sequence

Table 8.2.2.5.1.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message containing a *sCellToAddModList* with SCell Cell 3 addition without UL carrier.	<--	*RRCConnectionReconfiguration*	-	-
2	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message?	-->	*RRCConnectionReconfigurationComplete*	1	P

8.2.2.5.1.3.3 Specific message contents

Table 8.2.2.5.1.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.2.5.1.3.2-1)

Derivation Path: 36.331 clause 6.2.2			
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-Add	SCell addition for Cell 3 without UL carrier	
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			
}			
}			
}			
}			

Table 8.2.2.5.1.3.3-2: *SCellToAddMod-r10-f2-Add* (Table 8.2.2.5.1.3.3-1)

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		
radioResourceConfigDedicatedSCell-r10	RadioResourceConfigDedicatedSCell-r10-f2		
}			

Table 8.2.2.5.1.3.3-3: *RadioResourceConfigCommonSCell-r10-f2* (Table 8.2.2.5.1.3.3-2)

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		
}			
Ul-Configuration-r10	Not present		
}			

Table 8.2.2.5.1.3.3-4: *RadioResourceConfigDedicatedSCell-r10-f2* (Table 8.2.2.5.1.3.3-2)

Derivation Path: 36.508 clause 4.6.3 table 4.6.3-19AA			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicatedSCell-r10 ::= SEQUENCE {			
physicalConfigDedicatedSCell-r10 SEQUENCE {			
ul-Configuration-r10	Not present		
}			
}			

8.2.2.5.2 CA / RRC connection reconfiguration / SCell addition without UL / Success / Inter-band CA

The scope and description of the present TC is the same as test case 8.2.2.5.1 with the following differences:

- CA configuration: Inter-band CA replaces Intra-band Contiguous CA
- Cells configuration: Cell 10 replaces Cell 3
- Cell 10 is an Inactive SCell according to [18] cl. 6.3.4

8.2.2.6 RRC connection reconfiguration/ UE Assistance Information

8.2.2.6.1 RRC connection reconfiguration/ UE Assistance Information/power preference indication setup and release

8.2.2.6.1.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and it is not configured to provide power preference
indications }
ensure that {
  when { UE is caused to send UEAssistanceInformation message indicating "lowPowerConsumption" }
    then { the UE does not transmit a UEAssistanceInformation message }
            }
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and it is configured to provide power preference indications
with T340 set to 0s}
ensure that {
  when { UE prefers a configuration primarily optimised for power saving and sends the message
UEAssistanceInformation}
    then { the UE includes powerPrefIndication  set to lowPowerConsumption in the message
UEAssistanceInformation }
            }
```

(3)

```
with { UE in E-UTRA RRC_CONNECTED state and it is configured to provide power preference indications
and it has previously sent UEAssistanceInformation message indicating "lowPowerConsumption" }
ensure that {
  when { UE is caused to send UEAssistanceInformation message indicating "lowPowerConsumption"  }
    then { the UE does not transmit a UEAssistanceInformation message with powerPrefIndication  set
to lowPowerConsumption }
            }
```

(4)

```
with { UE in E-UTRA RRC_CONNECTED state and it is configured to provide power preference indications
}
ensure that {
  when { UE receives an RRCConnectionReconfiguration message containing a otherConfig that includes
the powerPrefIndicationConfig set to Release }
    then { the UE does not transmit any more UEAssistanceInformation message }
```

8.2.2.6.1.2 Conformance requirements

References: The conformance requirements covered in the current TC is specified in: TS 36.331, clauses 5.3.10.9, 5.6.10.2, 5.6.10.3 and 6.3.6. Unless otherwise stated these are Rel-11 requirements.

[TS 36.331, clause 5.3.10.9]

The UE shall:

...

1> if the received *otherConfig* includes the *powerPrefIndicationConfig*:

2> if *powerPrefIndicationConfig* is set to *setup*:

3> consider itself to be configured to provide power preference indications in accordance with 5.6.10;

2> else:

3> consider itself not to be configured to provide power preference indications;

[TS 36.331, clause 5.6.10.2]

A UE capable of providing power preference indications in RRC_CONNECTED may initiate the procedure in several cases including upon being configured to provide power preference indications and upon change of power preference.

Upon initiating the procedure, the UE shall:

1> if configured to provide power preference indications:

2> if the UE did not transmit a *UEAssistanceInformation* message since it was configured to provide power preference indications; or

2> if the current power preference is different from the one indicated in the last transmission of the *UEAssistanceInformation* message and timer T340 is not running:

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.6.10.3;

[TS 36.331, clause 5.6.10.3]

The UE shall set the contents of the *UEAssistanceInformation* message:

1> if the UE prefers a configuration primarily optimised for power saving:

2> set *powerPrefIndication* to *lowPowerConsumption*;

1> else:

2> start or restart timer T340 with the timer value set to the *powerPrefIndicationTimer*;

2> set *powerPrefIndication* to *normal*;

The UE shall submit the *UEAssistanceInformation* message to lower layers for transmission.

[TS 36.331, clause 6.3.6]

powerPrefIndicationTimer
Prohibit timer for Power Preference Indication reporting. Value in seconds. Value s0 means prohibit timer is set to 0 second or not set, value s0dot5 means prohibit timer is set to 0.5 second, value s1 means prohibit timer is set to 1 second and so on.

8.2.2.6.1.3 Test Description

8.2.2.6.1.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

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

8.2.2.6.1.3.2 Test procedure sequence

Table 8.2.2.6.1.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Cause the UE to send *UEAssistanceInformation* message indicating "*lowPowerConsumption*". (Note 1)			-	-
2	Check: Does the UE send a *UEAssistanceInformation* message within the next 5s?	-->	*UEAssistanceInformation*	1	F
3	The SS transmits an *RRCConnectionReconfiguration* message containing a *otherConfig* includes the *powerPrefIndicationConfig* set to *Setup*	<--	*RRCConnectionReconfiguration*		
4	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
5	Cause the UE to send *UEAssistanceInformation* message indicating "*lowPowerConsumption*". (Note 1)			-	-
6	Check: Does the UE transmit a *UEAssistanceInformation* message with *powerPrefIndication* set to *lowPowerConsumption?*	-->	*UEAssistanceInformation*	2	P
7	Cause the UE to send *UEAssistanceInformation* message indicating "*lowPowerConsumption*". (Note 1)				
8	Check: Does the UE send a *UEAssistanceInformation* message within the next 5s?	-->	*UEAssistanceInformation*	3	F
9	The SS transmits an *RRCConnectionReconfiguration* message containing a *otherConfig* includes the *powerPrefIndicationConfig* set to *Release*.	<--	*RRCConnectionReconfiguration*	-	-
10	The UE transmits an *RRCConnectionReconfigurationComplete* message	-->	*RRCConnectionReconfigurationComplete*	-	-
11	Cause the UE to send *UEAssistanceInformation* message indicating "normal". (Note 2)			-	-
12	Check: Does the UE send a *UEAssistanceInformation* message within the next 5s?	-->	*UEAssistanceInformation*	4	F
13	Cause the UE to send *UEAssistanceInformation* message indicating "l*owPowerConsumption*". (Note 1)			-	-
14	Check: Does the UE send a *UEAssistanceInformation* message within the next 5s?	-->	*UEAssistanceInformation*	4	F
Note 1: This indication may be triggered with the AT command +CEPPI/+CNMPSD or any alternative way. Note 2: This indication may be triggered with the AT command +CEPPI or any alternative way.					

8.2.2.6.1.3.3 Specific message contents

Table 8.2.2.6.1.3.3-1: *RRCConnectionReconfiguration* (Steps 3 and 9, Table 8.2.2.6.1.3.2-1)

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

Table 8.2.2.6.1.3.3-2: *OtherConfig-r9* (step 3, Table 8.2.2.6.1.3.2-1)

Derivation Path: 36.508, Table 4.6.3-28 condition Setup			
Information Element	**Value/remark**	**Comment**	**Condition**
OtherConfig-r9 SEQUENCE {			
PowerPrefIndicationConfig-r11 CHOICE {			
setup SEQUENCE {			
powerPrefIndicationTimer-r11	s0		
}			
}			
}			

Table 8.2.2.6.1.3.3-2: *UEAssistanceInformation* (Step 6, Table 8.2.2.6.1.3.2-1)

Derivation Path: 36.508, Table 4.6.1-26 condition Low_Power

Table 8.2.2.6.1.3.3-3: *OtherConfig-r9* (Step 9, Table 8.2.2.6.1.3.2-3)

Derivation Path: 36.508, Table 4.6.3-28 condition Release

8.2.2.6.2 RRC connection reconfiguration/ UE Assistance Information/power preference indication release on connection re-establishment

8.2.2.6.2.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_Connected state & configured to provide power preference indication }
ensure that {
  when { RRC Connection re-establishment procedure is initiated }
    then { UE shall stop T340 }
          }
```

(2)

```
with { UE in E-UTRA RRC_Connected state & configured to provide power preference indication }
ensure that {
  when { RRC Connection re-establishment procedure is initiated }
    then { UE shall release the powerPrefIndicationConfig }
          }
```

8.2.2.6.2.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331 clause 5.6.10.1, 5.6.10.2, 5.6.10.3 and 5.3.7.2. Unless otherwise stated these are Rel-11 requirements.

[TS 36.331 clause 5.6.10.1]

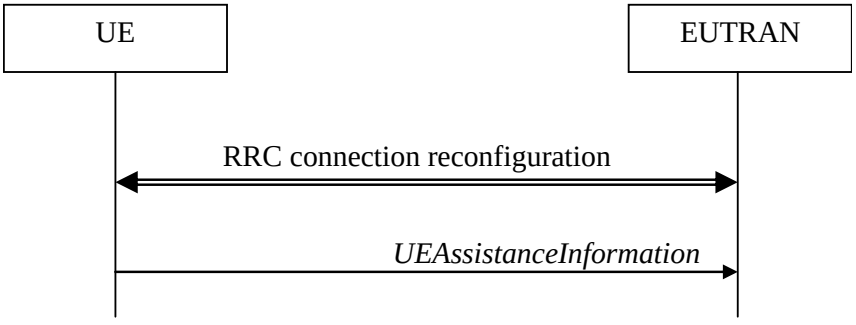

Figure 5.6.10.1-1: UE Assistance Information

The purpose of this procedure is to inform E-UTRAN of the UE's power saving preference. Upon configuring the UE to provide power preference indications E-UTRAN may consider that the UE does not prefer a configuration primarily optimised for power saving until the UE explicitly indicates otherwise.

[TS 36.331 clause 5.6.10.2]

A UE capable of providing power preference indications in RRC_CONNECTED may initiate the procedure in several cases including upon being configured to provide power preference indications and upon change of power preference.

Upon initiating the procedure, the UE shall:

1> if configured to provide power preference indications:

2> if the UE did not transmit a *UEAssistanceInformation* message since it was configured to provide power preference indications; or

2> if the current power preference is different from the one indicated in the last transmission of the *UEAssistanceInformation* message and timer T340 is not running:

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.6.10.3;

[TS 36.331 clause 5.6.10.3]

The UE shall set the contents of the *UEAssistanceInformation* message:

1> if the UE prefers a configuration primarily optimised for power saving:

2> set powerPrefIndication to lowPowerConsumption;

1> else:

2> start or restart timer T340 with the timer value set to the *powerPrefIndicationTimer*;

2> set powerPrefIndication to normal;

The UE shall submit the *UEAssistanceInformation* message to lower layers for transmission.

[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> release the SCell(s), if configured, in accordance with 5.3.10.3a;

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 *powerPrefIndicationConfig*, if configured and stop timer T340, if running;

1> release *reportProximityConfig* and clear any associated proximity status reporting timer;

1> release *obtainLocationConfig*, if configured;

1> release *idc-Config*, if configured;

1> release *measSubframePatternPCell*, if configured;

1> if connected as an RN and configured with an RN subframe configuration:

2> release the RN subframe configuration;

1> perform cell selection in accordance with the cell selection process as specified in TS 36.304 [4];

8.2.2.6.2.3 Test description

8.2.2.6.2.3.1 Pre-test conditions

System Simulator:

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

UE:

- The UE supporting power preference indication.

Preamble:

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

8.2.2.6.2.3.2 Test procedure sequence

Table 8.2.2.6.2.3.2-1 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 8.2.2.6.2.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 3	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	-91	The power level values are such that measurement results for Cell 1 (M1) and Cell 3 (M3) satisfy exit condition for event A3 (M3 < 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 3 (M3) satisfy entry condition for event A3 (M3 > M1).
T2	Cell-specific RS EPRE	dBm/15kHz	-85	"Off"	The power level values are assigned to satisfy SrxlevCell 3 < 0 such that selecting Cell 1 is guaranteed (NOTE 1).
NOTE 1: Power level “Off” is defined in TS36.508 Table 6.2.2.1-1.					

Table 8.2.2.6.2.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup intra frequency measurement on Cell 1 & to configure power preference indication.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Cause the UE to send *UEAssistanceInformation* message indicating "*lowPowerConsumption*". (Note1).	-	-	-	-
4	UE transmits *UEAssistanceInformation* message with *powerPrefIndication* IE set to *lowPowerConsumption*.	-->	*UEAssistanceInformation*	-	-
5	Cause the UE to send *UEAssistanceInformation* message indicating "normal"(Note2).	-	-	-	-
6	UE transmits *UEAssistanceInformation* message with *powerPrefIndication* IE set to *normal* and starts timer T340 with the timer value set to the *powerPrefIndicationTimer*.	-->	*UEAssistanceInformation*	-	-
7	The SS changes Cell 1 and Cell 3 parameters according to the row "T1" in table 8.2.2.6.2.3.2-1.	-	-	-	-
8	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP, RSRQ value for Cell 3.	-->	*MeasurementReport*	-	-
9	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to order the UE to perform intra frequency handover to Cell 3.	<--	*RRCConnectionReconfiguration*	-	-
-	EXCEPTION: In parallel to the events described in step 9 the steps specified in Table 8.2.2.6.2.3.2-3 should take place.	-	-	-	-
10	The SS changes Cell 1 and Cell 3 parameters according to the row "T2" in table 8.2.2.6.2.3.2-1.	-	-	-	-
11	The UE releases the configured *powerPrefIndicationConfig*, stops timer T340 and transmit an *RRCConnectionReestablishmentRequest* message on Cell 1.	-->	*RRCConnectionReestablishmentRequest*	-	-
12	The SS transmits an *RRCConnectionReestablishment* message to resume SRB1 operation and re-activate security on Cell 1.	<--	*RRCConnectionReestablishment*	-	-
13	The UE transmits an *RRCConnectionReestablishmentComplete* message on Cell 1.	-->	*RRCConnectionReestablishmentComplete*	-	-
14	Cause the UE to send *UEAssistanceInformation* message indicating "*lowPowerConsumption*". (Note1).	-	-	-	-
15	Check: Does the UE transmit *UEAssistanceInformation* message? (Note 3).	-->	*UEAssistanceInformation*	2	F
16	The SS transmits an *RRCConnectionReconfiguration* message to resume existing radio bearer on Cell 1 & to configure power preference indication.	<--	*RRCConnectionReconfiguration*	-	-
17	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
18	Cause the UE to send *UEAssistanceInformation* message indicating "*lowPowerConsumption*". (Note1).	-	-	-	-

19	Check: Does the UE transmit *UEAssistanceInformation* message with *powerPrefIndication* IE set to *lowPowerConsumption*? (Note 4).	-->	*UEAssistanceInformation*	1	P

Note 1: This indication may be triggered with the AT command +CEPPI/+CNMPSD or any alternative way.
Note 2: This indication may be triggered with the AT command +CEPPI or any alternative way.
Note 3: This is a negative check for TP2 to make sure that the UE has released the configured *powerPrefIndicationConfig* at step 11.
Note 4: The total time to execute step 6 – step 17 should be less than the T340 timer value *powerPrefIndicationTimer* configured at step 1 and started at step 6. This is to make sure that timer T340 has been stopped successfully at step 11 and only then UE will initiate *UEAssistanceInformation* message with *powerPrefIndication* IE set to *lowPowerConsumption* at step 17.

Table 8.2.2.6.2.3.2-3: 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 3.	-	-	-	-
2	The SS does not respond.	-	-	-	-

8.2.2.6.2.3.3 Specific message contents

Table 8.2.2.6.2.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.2.6.2.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, conditions MEAS & OtherConfig

Table 8.2.2.6.2.3.3-2: *MeasConfig* (Table 8.2.2.6.2.3.3-1)

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 8.2.2.6.2.3.3-3: *OtherConfig-r9* (Table 8.2.2.6.2.3.3-1)

Derivation Path: 36.508, Table 4.6.3-28 condition Setup			
Information Element	**Value/remark**	**Comment**	**Condition**
OtherConfig-r9 SEQUENCE {			
PowerPrefIndicationConfig-r11 CHOICE {			
setup SEQUENCE {			
powerPrefIndicationTimer-r11	s600		
}			
}			
}			

Table 8.2.2.6.2.3.3-4: *UEAssistanceInformation* (step 4, 15 & 19, Table 8.2.2.6.2.3.2-2)

Derivation Path: 36.508, Table 4.6.1-26 condition Low_Power			
Information Element	**Value/remark**	**Comment**	**Condition**
powerPreferenceIndication-r11	lowPowerConsumption		

Table 8.2.2.6.2.3.3-5: *UEAssistanceInformation* (step 6, Table 8.2.2.6.2.3.2-2)

Derivation Path: 36.508, Table 4.6.1-26 condition Normal			
Information Element	**Value/remark**	**Comment**	**Condition**
powerPreferenceIndication-r11	normal		

Table 8.2.2.6.2.3.3-6: *MeasurementReport* (step 8, Table 8.2.2.6.2.3.2-2)

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 3		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.2.2.6.2.3.3-7: *RRCConnectionReconfiguration* (step 9, Table 8.2.2.6.2.3.2-2)

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

Table 8.2.2.6.2.3.3-8: *MobilityControlInfo* (8.2.2.6.2.3.3-7)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 3		
carrierFreq	Not present		
}			

Table 8.2.2.6.2.3.3-9: *RRCConnectionReestablishmentRequest* (step 11, Table 8.2.2.6.2.3.2-2)

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 8.2.2.6.2.3.3-10: *RRCConnectionReestablishmentComplete* (step 13, Table 8.2.2.6.2.3.2-2)

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 8.2.2.6.2.3.3-11: *RRCConnectionReconfiguration* (step 16, Table 8.2.2.6.2.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8 & condition OtherConfig			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
radioResourceConfigDedicated	RadioResourceConfigDedicated-HO		
}			
}			
}			
}			

Table 8.2.2.6.2.3.3-12: *OtherConfig-r9* (Table 8.2.2.6.2.3.3-11)

Derivation Path: 36.508, Table 4.6.3-28, condition Setup			
Information Element	**Value/remark**	**Comment**	**Condition**
OtherConfig-r9 SEQUENCE {			
PowerPrefIndicationConfig-r11 CHOICE {			
setup SEQUENCE {			
powerPrefIndicationTimer-r11	s10		
}			
}			
}			

8.2.2.6.3 RRC connection reconfiguration/ UE Assistance Information/T340 running

8.2.2.6.3.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state and T340 is running }
ensure that {
  when { UE is caused to send UEAssistanceInformation message }
    then { the UE does not transmit a UEAssistanceInformation message }
           }
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and the UE has received a new value for
powerPrefIndicationTimer}
ensure that {
  when { UE is caused to send UEAssistanceInformation message indicating "lowPowerConsumption" after
T340 expired }
    then { the UE does transmits a UEAssistanceInformation message with powerPrefIndication  set to
lowPowerConsumption}
           }
```

8.2.2.6.3.2 Conformance requirements

References: The conformance requirements covered in the current TC is specified in: TS 36.331, clauses 5.6.10.2 and 5.6.10.3. Unless otherwise stated these are Rel-11 requirements.

[TS 36.331, clause 5.6.10.2]

A UE capable of providing power preference indications in RRC_CONNECTED may initiate the procedure in several cases including upon being configured to provide power preference indications and upon change of power preference.

Upon initiating the procedure, the UE shall:

1> if configured to provide power preference indications:

2> if the UE did not transmit a *UEAssistanceInformation* message since it was configured to provide power preference indications; or

2> if the current power preference is different from the one indicated in the last transmission of the *UEAssistanceInformation* message and timer T340 is not running:

3> initiate transmission of the *UEAssistanceInformation* message in accordance with 5.6.10.3;

[TS 36.331, clause 5.6.10.3]

The UE shall set the contents of the *UEAssistanceInformation* message:

1> if the UE prefers a configuration primarily optimised for power saving:

2> set *powerPrefIndication* to *lowPowerConsumption*;

1> else:

2> start or restart timer T340 with the timer value set to the *powerPrefIndicationTimer*;

2> set *powerPrefIndication* to *normal*;

The UE shall submit the *UEAssistanceInformation* message to lower layers for transmission.

8.2.2.6.3.3 Test Description

8.2.2.6.3.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

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

8.2.2.6.3.3.2 Test procedure sequence

Table 8.2.2.6.3.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message containing a *otherConfig* includes the *powerPrefIndicationConfig* set to *Setup*	<--	*RRCConnectionReconfiguration*		
2	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	Cause the UE to send *UEAssistanceInformation* message indicating "*lowPowerConsumption*". (Note 1)			-	-
4	The UE transmits a *UEAssistanceInformation* message with *powerPrefIndication* set to *lowPowerConsumption.*	-->	*UEAssistanceInformation*	-	-
5	Cause the UE to send *UEAssistanceInformation* message indicating "*normal*". (Note 2)			-	-
6	The UE transmits a *UEAssistanceInformation* message with *powerPrefIndication* set to *normal.* The UE starts T340.	-->	*UEAssistanceInformation*	-	-
7	Before T340 expires, cause the UE to send *UEAssistanceInformation* message indicating "*lowPowerConsumption*". (Note 1)			-	-
8	Check: Does the UE send a *UEAssistanceInformation* message before T340 expires?	-->	*UEAssistanceInformation*	1	F
9	Cause the UE to send *UEAssistanceInformation* message indicating "*lowPowerConsumption*" after T340 has expired. (Note 1)			-	-
10	The UE transmits a *UEAssistanceInformation* message with *powerPrefIndication* set to *lowPowerConsumption.*	-->	*UEAssistanceInformation*	-	-
11	The SS transmits an *RRCConnectionReconfiguration* message containing a *otherConfig* includes the *powerPrefIndicationConfig* set to *Setup* and a new value for *powerPrefIndicationTimer.*	<--	*RRCConnectionReconfiguration*		
12	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
13	Cause the UE to send *UEAssistanceInformation* message indicating "*normal*". (Note 2)			-	-
14	The UE transmits a *UEAssistanceInformation* message with *powerPrefIndication* set to *normal.* The UE starts T340. Start timer T=300s(this is the same value as the *powerPrefIndicationTimer* value set in Step 1).	-->	*UEAssistanceInformation*	-	-
15	After T340 expires but before T expires cause the UE to send UEAssistanceInformation message indicating "lowPowerConsumption". (Note 1)			-	-
16	Check: Does the UE send a *UEAssistanceInformation* message with	-->	*UEAssistanceInformation*	2	P

	powerPrefIndication set to *lowPowerConsumption*?				
Note 1: This indication may be triggered with the AT command +CEPPI/+CNMPSD or any alternative way. Note 2: This indication may be triggered with the AT command +CEPPI or any alternative way.					

8.2.2.6.3.3.3 Specific message contents

Table 8.2.2.6.3.3.3-1: *RRCConnectionReconfiguration* (Steps 1 and 11 Table 8.2.2.6.3.3.2-1)

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

Table 8.2.2.6.3.3.3-2: *OtherConfig-r9* (Step 1, Table 8.2.2.6.3.3.2-1)

Derivation Path: 36.508, Table 4.6.3-28 condition Setup			
Information Element	**Value/remark**	**Comment**	**Condition**
OtherConfig-r9 SEQUENCE {			
PowerPrefIndicationConfig-r11 CHOICE {			
setup SEQUENCE {			
powerPrefIndicationTimer-r11	s300		
}			
}			
}			

Table 8.2.2.6.3.3.3-3: *UEAssistanceInformation* (Steps 4 and 10 Table 8.2.2.6.3.3.2-1)

Derivation Path: 36.508, Table 4.6.1-26 condition Low_Power

Table 8.2.2.6.3.3.3-4: *UEAssistanceInformation* (Steps 6 and 14, Table 8.2.2.6.3.3.2-1)

Derivation Path: 36.508, Table 4.6.1-26 condition Normal

Table 8.2.2.6.3.3.3-5: *OtherConfig-r9* (Step 11, Table 8.2.2.6.3.3.2-1)

Derivation Path: 36.508, Table 4.6.3-28 condition Setup			
Information Element	**Value/remark**	**Comment**	**Condition**
OtherConfig-r9 SEQUENCE {			
PowerPrefIndicationConfig-r11 CHOICE {			
setup SEQUENCE {			
powerPrefIndicationTimer-r11	s30		
}			
}			
}			

8.2.3 Radio bearer release

8.2.3.1 RRC connection reconfiguration / Radio bearer release / Success

8.2.3.1.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a drb-ToReleaseList }
    then { for each drb-Identity release the PDCP entity and RLC entity and DTCH logical channel
and indicate release of the DRB(s) to upper layers }
          }
```

8.2.3.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: 3GPP TS 36.331 clause 5.3.5.3 and 5.3.10.2.

[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:

2> if this is the first *RRCConnectionReconfiguration* message after successful completion of the RRC Connection Re-establishment procedure:

…

1> else:

2> If the *RRCConnectionReconfiguration* message includes the *radioResourceConfigDedicated*:

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

…

1> submit the *RRCConnectionReconfigurationComplete* message to lower layers for transmission using the new configuration, upon which the procedure ends;

[TS 36.331, clause 5.3.10.2]

The UE shall:

1> for each *drb-Identity* value included in the *drb-ToReleaseList* that is part of the current UE configuration (DRB release):

2> release the PDCP entity;

2> release the RLC entity;

2> release the DTCH logical channel;

1> indicate the release of the DRB(s) and the *eps-BearerIdentity* of the released DRB(s) to upper layers;

8.2.3.1.3 Test description

8.2.3.1.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 3) according to [18].
- The condition SRB2-DRB(2, 0) is used for step 8 in 4.5.3.3 according to [18].

8.2.3.1.3.2 Test procedure sequence

Table 8.2.3.1.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message with a drb-ToReleaseList.	<--	*RRCConnectionReconfiguration*	-	-
2	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message?	-->	*RRCConnectionReconfigurationComplete*	1	P
2a	The UE transmits an *ULInformationTransfer* message.	-->	*ULInformationTransfer*	-	-
3	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	-

8.2.3.1.3.3 Specific message contents

Table 8.2.3.1.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.3.1.3.2-1)

Derivation Path: 36.508 table 4.6.1-8			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
dedicatedInfoNASList SEQUENCE (SIZE(1..maxDRB)) OF	1 entry		
DedicatedInfoNAS[1]	DEACTIVATE EPS BEARER CONTEXT REQUEST with EPS bearer identity corresponding to drb-Identity 2 and ESM cause #36	According 36.508 table 4.7.3-12 and regular deactivation of a second DRB	
radioResourceConfigDedicated	RadioResourceConfigDedicated-DRB-RELEASE	Table 8.2.3.1.3.3-2	
}			
}			
}			
}			

Table 8.2.3.1.3.3-2: *RadioResourceConfigDedicated-DRB-RELEASE* (Table 8.2.3.1.3.3-1)

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 SEQUENCE (SIZE (1..maxDRB)) OF	1 entry		
drb-Identity[1]	2		
mac-MainConfig CHOICE { }	Not present		
sps-Config	Not present		
physicalConfigDedicated	Not present		
}			

8.2.4 Handover

8.2.4.1 RRC connection reconfiguration / Handover / Success / Dedicated preamble

8.2.4.1.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment and initial security activation procedure
and performed the intra frequency measurement}
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo with a
rach-ConfigDedicated }
    then { UE transmits an RRCConnectionReconfigurationComplete message }
            }
```

(2)

```
with { UE having completed the radio bearer establishment and initial security activation procedure
and performed the intra frequency measurement }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a nextHopChainingCount which
is different from the NCC associated with the currently active K_eNB }
    then { UE derives new K_eNB key from the nextHopChainingCount }
            }
```

(3)

```
with { UE having completed the radio bearer establishment and initial security activation procedure
and performed the intra frequency measurement }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a nextHopChainingCount which
is same as the NCC associated with the currently active K_eNB }
    then { UE derives new K_eNB key from the currently active K_eNB }
            }
```

8.2.4.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.5.4, 5.3.10.4 and 5.3.10.6.

[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;

NOTE 4: 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 5.3.10.4]

The UE shall:

1> reconfigure the MAC main configuration in accordance with the received *mac-MainConfig*;

[TS 36.331, clause 5.3.10.6]

The UE shall:

1> reconfigure the physical channel configuration in accordance with the received *physicalConfigDedicated*;

1> if the *antennaInfo* is included and set to '*explicitValue*':

2> if the configured *transmissionMode* is not '*tm3*' or '*tm4*' release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

1> else if the *antennaInfo* is included and set to '*defaultValue*':

2> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

8.2.4.1.3 Test description

8.2.4.1.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 4 and Cell 11.

UE:

None.

Preamble:

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

8.2.4.1.3.2 Test procedure sequence

Table 8.2.4.1.3.2-1 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", "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 8.2.4.1.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 4	Cell 11	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	-91	”Off”	The power level values are such that measurement results for Cell 1 (M1) and Cell 4 (M4) satisfy exit condition for event A3 (M4 < M1)(NOTE 1).
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-79	”Off”	The power level values are such that measurement results for Cell 1 (M1) and Cell 4 (M4) satisfy entry condition for event A3 (M4 > M1)(NOTE 1).
T2	Cell-specific RS EPRE	dBm/15kHz	-85	-91	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 4 (M4) satisfy entry condition for event A3 (M1 > M4)(NOTE 1).
T3	Cell-specific RS EPRE	dBm/15kHz	-85	“Off”	-79	The power level value are such that measurement results for Cell 1 (M1) and Cell 11 (M11) satisfy entry condition for event A3 (M11 > M1).
NOTE 1: Power level “Off” is defined in TS36.508 Table 6.2.2.1-1.						

Table 8.2.4.1.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup intra frequency measurement on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 1, Cell 4 and Cell 11 parameters according to the row "T1" in table 8.2.4.1.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message to report event A3 on Cell 1 with the measured RSRP, RSRQ value for Cell 4.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message to order the UE to perform intra frequency handover to Cell 4.	<--	*RRCConnectionReconfiguration*	-	-
6	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 4 using dedicated preamble to confirm the successful completion of the intra frequency handover? Check2: Does the UE transmit an *RRCConnectionReconfigurationComplete* using the security key derived from the currently active K_{eNB}?	-->	*RRCConnectionReconfigurationComplete*	1,3	P
7	The SS changes Cell 1, Cell 4 and Cell 11 parameters according to the row "T2" in table 8.2.4.1.3.2-1.	-	-	-	-
8	The UE transmits a *MeasurementReport* message to report event A3 on Cell 4 with the measured RSRP, RSRQ value for Cell 1.	-->	*MeasurementReport*	-	-
9	The SS transmits an *RRCConnectionReconfiguration* message to order the UE to perform intra frequency handover to Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
10	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 1 using dedicated preamble to confirm the successful completion of the intra frequency handover? Check2: Does the UE transmit an *RRCConnectionReconfigurationComplete* using the security key derived from the *nextHopChainingCount*?	-->	*RRCConnectionReconfigurationComplete*	1,2	P
11	The SS changes Cell 1 and Cell 11 parameters and switches Cell 4 off according to the row "T3" in table 8.2.4.1.3.2-1.	-	-	-	-
12	The UE transmits a *MeasurementReport* message to report event A3 on Cell 1 with the measured RSRP,RSRQ value for Cell 11.	-->	*MeasurementReport*	-	-
13	The SS transmits an *RRCConnectionReconfiguration* message to order the UE to perform intra frequency handover to Cell 11.	<--	*RRCConnectionReconfiguration*	-	-
14	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 11 using dedicated preamble to confirm the successful completion of the intra frequency handover? Check2: Does the UE transmit an *RRCConnectionReconfigurationComplete* using the security key derived from the *nextHopChainingCount*?	-->	*RRCConnectionReconfigurationComplete*	1,2	P
14A	The UE transmit a TRACKING AREA UPDATE	-	-	-	-

	REQUEST message on Cell 11.				
14B	SS responds with a TRACKING AREA UPDATE ACCEPT message.	-	-	-	-
14C	The UE transmits a TRACKING AREA UPDATE COMPLETE message.	-	-	-	-
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 11?	-	-	1	-

8.2.4.1.3.3 Specific message contents

Table 8.2.4.1.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.1.3.2-2)

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

Table 8.2.4.1.3.3-2: *MeasConfig* (Table 8.2.4.1.3.3-1)

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 8.2.4.1.3.3-3: *MeasurementReport* (step 4, Table 8.2.4.1.3.2-2)

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)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 4		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.2.4.1.3.3-4: *RRCConnectionReconfiguration* (step 5, Table 8.2.4.1.3.2-2)

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

Table 8.2.4.1.3.3-5: *MobilityControlInfo* (Table 8.2.4.1.3.3-4)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 4		
carrierFreq	Not present		
rach-ConfigDedicated SEQUENCE {			
ra-PreambleIndex	63		
ra-PRACH-MaskIndex	0		
}			
}			

Table 8.2.4.1.3.3-6: *MeasurementReport* (step 8, Table 8.2.4.1.3.2-2)

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)		
}			
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 8.2.4.1.3.3-7: *RRCConnectionReconfiguration* (step 9, Table 8.2.4.1.3.2-2)

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

Table 8.2.4.1.3.3-8: *MobilityControlInfo* (Table 8.2.4.1.3.3-7)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 1		
carrierFreq	Not present		
rach-ConfigDedicated SEQUENCE {			
ra-PreambleIndex	63		-
ra-PRACH-MaskIndex	0		
}			
}			

Table 8.2.4.1.3.3-9: *SecurityConfigHO* (step 9, Table 8.2.4.1.3.2-2)

Derivation Path: 36.508, Table 4.6.4-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SecurityConfigHO ::= SEQUENCE {			
handoverType CHOICE {			
intraLTE SEQUENCE {			
nextHopChainingCount	2		
}			
}			
}			

Table 8.2.4.1.3.3-10: *MeasurementReport* (step 12, Table 8.2.4.1.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measuredResults 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 11		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.2.4.1.3.3-11: *RRCConnectionReconfiguration* (step 13, Table 8.2.4.1.3.2-2)

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

Table 8.2.4.1.3.3-12: *MobilityControlInfo* (Table 8.2.4.1.3.3-11)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 11		
carrierFreq	Not present		
rach-ConfigDedicated SEQUENCE {			
ra-PreambleIndex	63		
ra-PRACH-MaskIndex	0		
}			
}			

Condition	Explanation
FDD	FDD cell environment
TDD	TDD cell environment

Table 8.2.4.1.3.3-13: *SecurityConfigHO* (Table 8.2.4.1.3.3-11)

Derivation Path: 36.508, Table 4.6.4-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SecurityConfigHO ::= SEQUENCE {			
handoverType CHOICE {			
intraLTE SEQUENCE {			
nextHopChainingCount	3		
}			
}			
}			

8.2.4.2 RRC connection reconfiguration / Handover / Success / Common preamble

8.2.4.2.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment and initial security activation procedure
and performed the intra frequency measurement }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo without
a rach-ConfigDedicated }
    then { UE transmits an RRCConnectionReconfigurationComplete message }
          }
```

8.2.4.2.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.5.4, 5.3.10.4 and 5.3.10.6.

[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 5.3.10.4]

The UE shall:

1> reconfigure the MAC main configuration in accordance with the received *mac-MainConfig*;

[TS 36.331, clause 5.3.10.6]

The UE shall:

1> reconfigure the physical channel configuration in accordance with the received *physicalConfigDedicated*;

1> if the *antennaInfo* is included and set to '*explicitValue*':

2> if the configured *transmissionMode* is not '*tm3*' or '*tm4*' release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

1> else if the *antennaInfo* is included and set to '*defaultValue*':

2> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

8.2.4.2.3 Test description

8.2.4.2.3.1 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].

8.2.4.2.3.2 Test procedure sequence

Table 8.2.4.2.3.2-1 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" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.2.4.2.3.2-1: 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).
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).

Table 8.2.4.2.3.2-2: 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.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 1 and Cell 2 parameters according to the row "T1" in table 8.2.4.2.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP, RSRQ value for Cell 2.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* 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 using common preamble to confirm the successful completion of the intra frequency handover?	-->	*RRCConnectionReconfigurationComplete*	1	P
7	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	-

8.2.4.2.3.3 Specific message contents

Table 8.2.4.2.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.2.3.2-2)

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

Table 8.2.4.2.3.3-2: *MeasConfig* (Table 8.2.4.2.3.3-1)

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 8.2.4.2.3.3-3 *MeasurementReport* (step 4, Table 8.2.4.2.3.2-2)

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 8.2.4.2.3.3-4: *RRCConnectionReconfiguration* (step 5, Table 8.2.4.2.3.2-2)

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

Table 8.2.4.2.3.3-5: *MobilityControlInfo* (Table 8.2.4.2.3.3-4)

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		
}			

8.2.4.3 RRC connection reconfiguration / Handover / Success / Intra-cell / Security reconfiguration

8.2.4.3.1 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 securityConfigHO }
    then { UE transmits an RRCConnectionReconfigurationComplete message }
          }
```

8.2.4.3.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.5.4.

[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 *eutra-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 *keyChangeIndicator* received in the *securityConfigHO* is set to *TRUE*:

2> update the K_{eNB} key based on the 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 K_{ASME} key to which the current K_{eNB} is associated, 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 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;

...

8.2.4.3.3 Test description

8.2.4.3.3.1 Pre-test conditions

System Simulator:

- Cell 1.

UE:

None.

Preamble:

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

8.2.4.3.3.2 Test procedure sequence

Table 8.2.4.3.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an AUTHENTICATION REQUEST message to initiate the EPS authentication and AKA procedure.	<--	*DLInformationTransfer*	-	-
2	The UE transmits an AUTHENTICATION RESPONSE message and re-establishes mutual authentication.	-->	*ULInformationTransfer*	-	-
3	The SS transmits a NAS SECURITY MODE COMMAND message to reactivate NAS security.	<--	*DLInformationTransfer*	-	-
4	The UE transmits a NAS SECURITY MODE COMPLETE message and re-establishes the security configuration.	-->	*ULInformationTransfer*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message to perform intra cell handover and security reconfiguration.	<--	*RRCConnectionReconfiguration*	-	-
6	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message using the security key indicated by the *keyChangeIndicator* and *nextHopChainingCount*, as well as the indicated algorithms, to confirm the successful completion of the intra cell handover and security reconfiguration?	-->	*RRCConnectionReconfigurationComplete*	1	P
7	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?	-	-	1	-

8.2.4.3.3.3 Specific message contents

Table 8.2.4.3.3.3-1: *RRCConnectionReconfiguration* (step 5, Table 8.2.4.3.3.2-1)

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

Table 8.2.4.3.3.3-2: *MobilityControlInfo* (Table 8.2.4.3.3.3-1)

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

Table 8.2.4.3.3.3-3: *SecurityConfigHO* (Table 8.2.4.3.3.3-1)

Derivation Path: 36.508, Table 4.6.4-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SecurityConfigHO ::= SEQUENCE {			
handoverType CHOICE {			
intraLTE SEQUENCE {			
keyChangeIndicator	TRUE		
nextHopChainingCount	0		
}			
}			
}			

8.2.4.4 RRC connection reconfiguration / Handover / Failure / Intra-cell / Security reconfiguration

8.2.4.4.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment and initial security activation procedure
and after receiving an RRCConnectionReconfiguration message including a SecurityConfigHO }
ensure that {
  when { UE detects handover failure and the initial cell is selectable }
    then { UE performs an RRC connection re-establishment procedure and remains in the E-UTRA
RRC_CONNECTED state }
            }
```

8.2.4.4.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.5.3, 5.3.5.4, 5.3.5.6, 5.3.7.4 and 5.3.7.5.

[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 this is the first *RRCConnectionReconfiguration* message after successful completion of the RRC Connection Re-establishment procedure:

2> re-establish PDCP for SRB2 and for all DRBs that are established, if any;

2> re-establish RLC for SRB2 and for all DRBs that are established, if any;

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

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

2> resume SRB2 and all DRBs that are suspended, if any;

NOTE 1: 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].

…

[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 5.3.5.6]

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 5.3.7.4]

The UE shall set the contents of *RRCConnectionReestablishmentRequest* message as follows:

1> set the *ue-Identity* as follows:

2> set the *c-RNTI* to the C-RNTI used in the source cell (handover and mobility from E-UTRA failure) or used in the cell in which the trigger for the re-establishment occurred (other cases);

2> set the *physCellId* to the physical cell identity of the source cell (handover and mobility from E-UTRA failure) or of the cell in which the trigger for the re-establishment occurred (other cases);

2> set the *shortMAC-I* to the 16 least significant bits of the MAC-I calculated:

3> over the ASN.1 encoded as per section 8 (i.e., a multiple of 8 bits) *VarShortMAC-Input*;

3> with the K_{RRCint} key and integrity protection algorithm that was used in the source cell (handover and mobility from E-UTRA failure) or of the cell in which the trigger for the re-establishment occurred (other cases); and

3> with all input bits for COUNT, BEARER and DIRECTION set to binary ones;

1> set the *reestablishmentCause* as follows:

2> if the re-establishment procedure was initiated due to reconfiguration failure as specified in 5.3.5.5 (the UE is unable to comply with the reconfiguration):

3> set the *reestablishmentCause* to the value '*reconfigurationFailure*';

2> else if the re-establishment procedure was initiated due to handover failure as specified in 5.3.5.6 (intra-LTE handover failure) or 5.4.3.5 (inter-RAT mobility from EUTRA failure):

3> set the *reestablishmentCause* to the value '*handoverFailure*';

2> else:

3> set the *reestablishmentCause* to the value '*otherFailure*';

The UE shall submit the *RRCConnectionReestablishmentRequest* message to lower layers for transmission.

[TS 36.331, clause 5.3.7.5]

NOTE: Prior to this, lower layer signalling is used to allocate a C-RNTI. For further details see TS 36.321 [6];

The UE shall:

1> stop timer T301;

1> re-establish PDCP for SRB1;

1> re-establish RLC for SRB1;

1> perform the radio resource configuration procedure in accordance with the received *radioResourceConfigDedicated* and as specified in 5.3.10;

1> resume SRB1;

1> update the K_{eNB} key based on the K_{ASME} key to which the current K_{eNB} is associated, using the *nextHopChainingCount* value indicated in the *RRCConnectionReestablishment* message, as specified in TS 33.401 [32];

1> store the *nextHopChainingCount* value;

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

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

1> configure lower layers to activate integrity protection using the previously configured algorithm and the K_{RRCint} key immediately, i.e., integrity protection 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 ciphering using the previously configured algorithm, the K_{RRCenc} key and the K_{UPenc} key immediately, i.e., ciphering 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> submit the *RRCConnectionReestablishmentComplete* message to lower layers for transmission, upon which the procedure ends;

8.2.4.4.3 Test description

8.2.4.4.3.1 Pre-test conditions

System Simulator:

- Cell 1.

UE:

None.

Preamble:

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

8.2.4.4.3.2 Test procedure sequence

Table 8.2.4.4.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to perform intra cell handover and security reconfiguration.	<--	*RRCConnectionReconfiguration*	-	-
-	EXCEPTION: In parallel to the events described in step 2 the steps specified in Table 8.2.4.4.3.2-2 should take place.	-	-	-	-
2	Wait for 1 s to ensure that T304 expires.	-	-	-	-
3	Check: Does the UE transmit an *RRCConnectionReestablishmentRequest* message?	-->	*RRCConnectionReestablishment Request*	1	P
4	The SS transmits an *RRCConnectionReestablishment* message to resume SRB1 operation and reactivate security.	<--	*RRCConnectionReestablishment*	-	-
5	The UE transmits an *RRCConnectionReestablishmentComplete* message.	-->	*RRCConnectionReestablishment Complete*	-	-
6	The SS transmits an *RRCConnectionReconfiguration* message to resume the existing radio bearer.	<--	*RRCConnectionReconfiguration*	-	-
7	The UE transmits an *RRCConnectionReconfigurationComplete* message.	-->	*RRCConnectionReconfigurationComplete*	-	-
8	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicates that the UE is in E-UTRA RRC_CONNECTED state?	-	-	1	-

Table 8.2.4.4.3.2-2: 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 cell handover using MAC Random Access Preamble.	-	-	-	-
2	The SS does not respond.	-	-	-	-

8.2.4.4.3.3 Specific message contents

Table 8.2.4.4.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.4.3.2-1)

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

Table 8.2.4.4.3.3-2: *MobilityControlInfo* (Table 8.2.4.4.3.3-1)

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

Table 8.2.4.4.3.3-3: *SecurityConfigHO* (Table 8.2.4.4.3.3-1)

Derivation Path: 36.508, Table 4.6.4-1			
Information Element	**Value/remark**	**Comment**	**Condition**
SecurityConfigHO ::= SEQUENCE {			
handoverType CHOICE {			
intraLTE SEQUENCE {			
nextHopChainingCount	2		
}			
}			
}			

Table 8.2.4.4.3.3-4: *RRCConnectionReestablishmentRequest* (step 3, Table 8.2.4.4.3.2-1)

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 8.2.4.4.3.3-5: *RRCConnectionReconfiguration* (step 6, Table 8.2.4.4.3.2-1)

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		
}			
}			
}			
}			

8.2.4.5 RRC connection reconfiguration / Handover / All parameters included

8.2.4.5.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment and initial security activation procedure
and performed the intra frequency measurement }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo is
provided with all parameters included }
    then { UE transmits an RRCConnectionReconfigurationComplete message }
          }
```

8.2.4.5.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.5.4, 5.3.10.4 and 5.3.10.6.

[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 5.3.10.4]

The UE shall:

1> reconfigure the MAC main configuration in accordance with the received *mac-MainConfig*;

[TS 36.331, clause 5.3.10.6]

The UE shall:

1> reconfigure the physical channel configuration in accordance with the received *physicalConfigDedicated*;

1> if the *antennaInfo* is included and set to '*explicitValue*':

2> if the configured *transmissionMode* is not '*tm3*' or '*tm4*' release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

1> else if the *antennaInfo* is included and set to '*defaultValue*':

2> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

8.2.4.5.3 Test description

8.2.4.5.3.1 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].

8.2.4.5.3.2 Test procedure sequence

Table 8.2.4.5.3.2-1 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" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.2.4.5.3.2-1: 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).
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).

Table 8.2.4.5.3.2-2: 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 8.2.4.5.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP and RSRQ values for Cell 2.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* 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 to confirm the successful completion of the intra frequency handover?	-->	*RRCConnectionReconfigurationComplete*	1	P
7	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	-

8.2.4.5.3.3 Specific message contents

Table 8.2.4.5.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.5.3.2-2)

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

Table 8.2.4.5.3.3-2: *MeasConfig* (Table 8.2.4.5.3.3-1)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	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 8.2.4.5.3.3-3: *MeasurementReport* (step 4, Table 8.2.4.5.3.2-2)

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 8.2.4.5.3.3-4: *RRCConnectionReconfiguration* (step 5, Table 8.2.4.5.3.2-2)

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

Table 8.2.4.5.3.3-5: *MobilityControlInfo* (Table 8.2.4.5.3.3-4)

Derivation Path: 36.331 clause 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 2		
carrierFreq SEQUENCE {			
dl-CarrierFreq	Same downlink EARFCN as used for Cell 2		
ul-CarrierFreq	Same uplink EARFCN as used for Cell 2		FDD
ul-CarrierFreq	Not present		TDD
}			
carrierBandwidth SEQUENCE {			
dl-Bandwidth	Same downlink system bandwidth as used for Cell 2		
ul-Bandwidth	Same uplink system bandwidth as used for Cell 2		FDD
ul-Bandwidth	Not present		TDD
}			
additionalSpectrumEmission	Same additionalSpectrumEmission as used for Cell 2		
t304	ms1000		
newUE-Identity	SS arbitrarily selects a value between ‘003C’H and ‘FFF2’H.		
radioResourceConfigCommon SEQUENCE {			
rach-ConfigCommon	RACH-ConfigCommon-DEFAULT		
prach-Config	PRACH-Config-DEFAULT		
pdsch-ConfigCommon	PDSCH-ConfigCommon-DEFAULT		
pusch-ConfiCommon	PUSCH-ConfigCommon-DEFAULT		
phich-Config	PHICH-Config-DEFAULT		
pucch-ConfigCommon	PUCCH-ConfigCommon-DEFAULT		
soundingRS-UL-ConfigCommon	SoundingRsUl-ConfigCommon-DEFAULT		
uplinkPowerControlCommon	UplinkPowerControlCommon-DEFAULT		
antennaInfoCommon SEQUENCE {			
antennaPortsCount	an1		
}			
p-Max	Not present		
tdd-Config	Not present		FDD
	TDD-Config-DEFAULT		TDD
ul-CyclicPrefixLength	len1		
}			
rach-ConfigDedicated	Not present		
}			

Condition	Explanation
FDD	FDD cell environment
TDD	TDD cell environment

8.2.4.6 RRC connection reconfiguration / Handover / Success / Inter-frequency

8.2.4.6.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment and initial security activation procedure
and performed the inter frequency measurement }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo
indicating a different E-UTRA frequency}
    then { UE transmits an RRCConnectionReconfigurationComplete message }
          }
```

8.2.4.6.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.5.4, 5.3.10.4 and 5.3.10.6.

[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 5.3.10.4]

The UE shall:

1> reconfigure the MAC main configuration in accordance with the received *mac-MainConfig*;

[TS 36.331, clause 5.3.10.6]

The UE shall:

1> reconfigure the physical channel configuration in accordance with the received physicalConfig Dedicated;

1> if the antennaInfo is included and set to 'explicitValue':

2> if the configured *transmissionMode* is not '*tm3*' or '*tm4*' release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

1> else if the *antennaInfo* is included and set to '*defaultValue*':

2> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

8.2.4.6.3 Test description

8.2.4.6.3.1 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].

8.2.4.6.3.2 Test procedure sequence

Table 8.2.4.6.3.2-1 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 8.2.4.6.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 3	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	-97	The power level values are such that measurement results for Cell 1 (M1) and Cell 3 (M3) satisfy exit condition for event A3 (M3 < M1).
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-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).

Table 8.2.4.6.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to setup inter frequency measurement.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 1 and Cell 3 parameters according to the row "T1" in table 8.2.4.6.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP, RSRQ value for Cell 3.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to order the UE to perform inter frequency handover to Cell 3.	<--	*RRCConnectionReconfiguration*	-	-
6	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 3 to confirm the successful completion of the inter frequency handover?	-->	*RRCConnectionReconfigurationComplete*	1	P
7	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicates that the UE is in E-UTRA RRC_CONNECTED state on Cell 3?	-	-	1	-

8.2.4.6.3.3 Specific message contents

Table 8.2.4.6.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.6.3.2-2)

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

Table 8.2.4.6.3.3-2: *MeasConfig* (Table 8.2.4.6.3.3-1)

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 {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f2		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

Table 8.2.4.6.3.3-3: *MeasurementReport* (step 4, Table 8.2.4.6.3.2-2)

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 3		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.2.4.6.3.3-4: *RRCConnectionReconfiguration* (step 5, Table 8.2.4.6.3.2-2)

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

Table 8.2.4.6.3.3-5: *MobilityControlInfo* (Table 8.2.4.6.3.3-5)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 3		
carrierFreq SEQUENCE {			
dl-CarrierFreq	Same downlink EARFCN as used for Cell 3		
ul-CarrierFreq	Not present		
}			
}			

8.2.4.7 RRC connection reconfiguration / Handover / Failure / Re-establishment successful

8.2.4.7.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment and initial security activation procedure
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 initial cell is selectable }
    then { UE performs an RRC connection re-establishment procedure and remains in the E-UTRA
RRC_CONNECTED state }
```

```
            }
```

(2)

```
with { UE having transmitted an RRCConnectionReestablishmentRequest message }
ensure that {
  when { UE receives an RRCConnectionReestablishment message with a nextHopChainingCount which is
different from the NCC associated with the currently active K_eNB }
    then { UE derives new K_eNB from the nextHopChainingCount }
            }
```

(3)

```
with { UE having transmitted an RRCConnectionReestablishmentRequest message }
ensure that {
  when { UE receives an RRCConnectionReestablishment message with a nextHopChainingCount which is
same as the NCC associated with the currently active K_eNB }
    then { UE derives new K_eNB from the currently active K_eNB }
            }
```

8.2.4.7.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.5.4, 5.3.5.6, 5.3.7.2, 5.3.7.4, 5.3.7.5, 5.3.10.4 and 5.3.10.6.

[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 5.3.5.6]

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 handover failure, in accordance with 5.3.5.6; or

...

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 5.3.7.4]

The UE shall set the contents of *RRCConnectionReestablishmentRequest* message as follows:

1> set the *ue-Identity* as follows:

2> set the *c-RNTI* to the C-RNTI used in the source cell (handover and mobility from E-UTRA failure) or used in the cell in which the trigger for the re-establishment occurred (other cases);

2> set the *physCellId* to the physical cell identity of the source cell (handover and mobility from E-UTRA failure) or of the cell in which the trigger for the re-establishment occurred (other cases);

2> set the *shortMAC-I* to the 16 least significant bits of the MAC-I calculated:

3> over the ASN.1 encoded as per section 8 (i.e., a multiple of 8 bits) *VarShortMAC-Input*;

3> with the K_{RRCint} key and integrity protection algorithm that was used in the source cell (handover and mobility from E-UTRA failure) or of the cell in which the trigger for the re-establishment occurred (other cases); and

3> with all input bits for COUNT, BEARER and DIRECTION set to binary ones;

1> set the *reestablishmentCause* as follows:

2> if the re-establishment procedure was initiated due to reconfiguration failure as specified in 5.3.5.5 (the UE is unable to comply with the reconfiguration):

3> set the *reestablishmentCause* to the value '*reconfigurationFailure*';

2> else if the re-establishment procedure was initiated due to handover failure as specified in 5.3.5.6 (intra-LTE handover failure) or 5.4.3.5 (inter-RAT mobility from EUTRA failure):

3> set the *reestablishmentCause* to the value '*handoverFailure*';

...

The UE shall submit the *RRCConnectionReestablishmentRequest* message to lower layers for transmission.

[TS 36.331, clause 5.3.7.5]

NOTE: Prior to this, lower layer signalling is used to allocate a C-RNTI. For further details see TS 36.321 [6];

The UE shall:

1> stop timer T301;

1> re-establish PDCP for SRB1;

1> re-establish RLC for SRB1;

1> perform the radio resource configuration procedure in accordance with the received *radioResourceConfigDedicated* and as specified in 5.3.10;

1> resume SRB1;

1> update the K_{eNB} key based on the K_{ASME} key to which the current K_{eNB} is associated, using the *nextHopChainingCount* value indicated in the *RRCConnectionReestablishment* message, as specified in TS 33.401 [32];

1> store the *nextHopChainingCount* value;

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

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

1> configure lower layers to activate integrity protection using the previously configured algorithm and the K_{RRCint} key immediately, i.e., integrity protection 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 ciphering using the previously configured algorithm, the K_{RRCenc} key and the K_{UPenc} key immediately, i.e., ciphering 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> submit the *RRCConnectionReestablishmentComplete* message to lower layers for transmission, upon which the procedure ends;

[TS 36.331, clause 5.3.10.4]

The UE shall:

1> reconfigure the MAC main configuration in accordance with the received *mac-MainConfig*;

[TS 36.331, clause 5.3.10.6]

The UE shall:

1> reconfigure the physical channel configuration in accordance with the received *physicalConfigDedicated*;

1> if the *antennaInfo* is included and set to '*explicitValue*':

2> if the configured *transmissionMode* is not '*tm3*' or '*tm4*' release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

1> else if the *antennaInfo* is included and set to '*defaultValue*':

2> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

8.2.4.7.3 Test description

8.2.4.7.3.1 Pre-test conditions

System Simulator:

- Cell 1, Cell 4 and Cell 11.

UE:

None.

Preamble:

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

8.2.4.7.3.2 Test procedure sequence

Table 8.2.4.7.3.2-1 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 after preamble, while columns marked "T1", "T2", "T3", "T4", "T5" and "T6" are to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.2.4.7.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 4	Cell 11	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	-91	-91	The power level values are such that measurement results for Cell 1 (M1) Cell 4 (M4) and Cell 11(M11) satisfy exit condition for event A3 (M4 < M1 and M11 < M1).
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-79	-91	The power level values are such that measurement results for Cell 1 (M1) and Cell 4 (M4) satisfy entry condition for event A3 (M4 > M1).
T2	Cell-specific RS EPRE	dBm/15kHz	"Off"	-79	"Off"	The power level values are assigned to satisfy SrxlevCell 1 < 0 and SrxlevCell 11 < 0 such that selecting Cell 4 is guaranteed (NOTE 1).
T3	Cell-specific RS EPRE	dBm/15kHz	-73	-79	"Off"	The power level values are such that measurement results for Cell 1 (M1) and Cell 4 (M4) satisfy entry condition for event A3 (M1> M4). (NOTE 1).
T4	Cell-specific RS EPRE	dBm/15kHz	-73	"Off"	"Off"	The power level values are assigned to satisfy SrxlevCell 4 < 0 and SrxlevCell 11 < 0 such that selecting Cell 1 is guaranteed. (NOTE 1).
T5	Cell-specific RS EPRE	dBm/15kHz	-73	"Off"	-67	The power level values are such that measurement results for Cell 1 (M1) and Cell 11 (M11) satisfy entry condition for event A3 (M11> M1). (NOTE 1).
T6	Cell-specific RS EPRE	dBm/15kHz	"Off"	"Off"	-67	The power level values are assigned to satisfy SrxlevCell 1 < 0 and SrxlevCell 4 < 0 such that selecting Cell 11 is guaranteed. (NOTE 1).
NOTE 1: Power level “Off” is defined in TS36.508 Table 6.2.2.1-1.						

Table 8.2.4.7.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup intra frequency measurement on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 1, Cell 4 and Cell 11 parameters according to the row "T1" in table 8.2.4.7.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP, RSRQ value for Cell 4.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to order the UE to perform intra frequency handover to Cell 4.	<--	*RRCConnectionReconfiguration*	-	-
-	EXCEPTION: In parallel to the events described in step 6 the steps specified in Table 8.2.4.7.3.2-3 should take place.	-	-	-	-
6	The SS changes Cell 1, Cell 4 and Cell 11 parameters according to the row "T2" in table 8.2.4.7.3.2-1.	-	-	-	-
7	Check: Does the UE transmit an *RRCConnectionReestablishmentRequest* message on Cell 4?	-->	*RRCConnectionReestablishmentRequest*	1	P
8	The SS transmits an *RRCConnectionReestablishment* message to resume SRB1 operation and re-activate security on Cell 4.	<--	*RRCConnectionReestablishment*	-	-
9	Check: Does the UE transmit an *RRCConnectionReestablishmentComplete* message using the security key derived from the currently active K_{eNB} on Cell 4?	-->	*RRCConnectionReestablishmentComplete*	3	P
10	The SS transmits an *RRCConnectionReconfiguration* message to resume existing radio bearer on Cell 4.	<--	*RRCConnectionReconfiguration*	-	-
11	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 4.	-->	*RRCConnectionReconfigurationtComplete*	-	-
12	The SS changes Cell 1, Cell 4 and Cell 11 parameters according to the row "T3" in table 8.2.4.7.3.2-1.	-	-	-	-
13	The UE transmits a *MeasurementReport* message on Cell 4 to report event A3 with the measured RSRP, RSRQ value for Cell 1.	-->	*MeasurementReport*	-	-
14	The SS transmits an *RRCConnectionReconfiguration* message on Cell 4 to order the UE to perform intra frequency handover to Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
-	EXCEPTION: In parallel to the events described in step 15 the steps specified in Table 8.2.4.7.3.2-4 should take place.	-	-	-	-
15	The SS changes Cell 1, Cell 4 and Cell 11 parameters according to the row "T4" in table 8.2.4.7.3.2-1.	-	-	-	-
16	Check: Does the UE transmit an *RRCConnectionReestablishmentRequest* message on Cell 1?	-->	*RRCConnectionReestablishmentRequest*	1	P
17	The SS transmits an *RRCConnectionReestablishment* message to resume SRB1 operation and re-activate security on Cell 1.	<--	*RRCConnectionReestablishment*	-	-
18	Check: Does the UE transmit an	-->	*RRCConnectionReestablishment*	2	P

	RRCConnectionReestablishmentComplete message using the security key derived from the *nextHopChainingCount* on Cell 1?		*Complete*		
19	The SS transmits an *RRCConnectionReconfiguration* message to resume existing radio bearer on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
20	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationtComplete*	-	-
21	The SS changes Cell 1, Cell 4 and Cell 11 parameters according to the row "T5" in table 8.2.4.7.3.2-1.	-	-	-	-
22	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP, RSRQ value for Cell 11.	-->	*MeasurementReport*	-	-
23	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to order the UE to perform intra frequency handover to Cell 11.	<--	*RRCConnectionReconfiguration*	-	-
-	EXCEPTION: In parallel to the events described in step 24 the steps specified in Table 8.2.4.7.3.2-5 should take place.	-	-	-	-
24	The SS changes Cell 1, Cell 4 and Cell 11 parameters according to the row "T6" in table 8.2.4.7.3.2-1.	-	-	-	-
25	Check: Does the UE transmit an *RRCConnectionReestablishmentRequest* message on Cell 11?	-->	*RRCConnectionReestablishmentRequest*	1	P
26	The SS transmits an *RRCConnectionReestablishment* message to resume SRB1 operation and re-activate security on Cell 11.	<--	*RRCConnectionReestablishment*	-	-
27	Check: Does the UE transmit an *RRCConnectionReestablishmentComplete* message using the security key derived from the *nextHopChainingCount* on Cell 11?	-->	*RRCConnectionReestablishmentComplete*	2	P
28	The SS transmits an *RRCConnectionReconfiguration* message to resume existing radio bearer on Cell 11.	<--	*RRCConnectionReconfiguration*	-	-
29	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 11.	-->	*RRCConnectionReconfigurationtComplete*	-	-
29A	The UE transmit a TRACKING AREA UPDATE REQUEST message on Cell 11.	-	-	-	-
29B	SS responds with TRACKING AREA UPDATE ACCEPT message.	-	-	-	-
29C	The UE transmits a TRACKING AREA UPDATE COMPLETE.	-	-	-	-
30	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 11?	-	-	1	-

Table 8.2.4.7.3.2-3: 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 4.	-	-	-	-
2	The SS does not respond.	-	-	-	-

Table 8.2.4.7.3.2-4: 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 intra frequency handover using MAC Random Access Preamble on Cell 1.	-	-	-	-
2	The SS does not respond.	-	-	-	-

Table 8.2.4.7.3.2-5: 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 11.	-	-	-	-
2	The SS does not respond.	-	-	-	-

8.2.4.7.3.3 Specific message contents

Table 8.2.4.7.3.3-0: *SystemInformationBlockType2* for Cell 1, cell 4 and Cell 11 (preamble and all the steps in Table 8.2.4.7.3.2-2)

Derivation Path: 36.508, Table 4.6.3-12			
Information Element	**Value/remark**	**Comment**	**Condition**
ra-SupervisionInfo SEQUENCE {			
preambleTransMax	n50		
}			

Table 8.2.4.7.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.7.3.2-2)

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

Table 8.2.4.7.3.3-2: *MeasConfig* (Table 8.2.4.7.3.3-1)

Derivation Path: 36.508, Table 4.6.6-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasConfig SEQUENCE {			
measObjectToAddModList SEQUENCE (SIZE (1..maxObjectId)) OF SEQUENCE {	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 8.2.4.7.3.3-3: *MeasurementReport* (step 4, Table 8.2.4.7.3.2-2)

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 {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 4		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.2.4.7.3.3-4: *RRCConnectionReconfiguration* (step 5, Table 8.2.4.7.3.2-2)

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

Table 8.2.4.7.3.3-5: *MobilityControlInfo* (Table 8.2.4.7.3.3-4)

Derivation Path: 36.308, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 4		
carrierFreq	Not present		
rach-ConfigDedicated SEQUENCE {			
ra-PreambleIndex	63		
ra-PRACH-MaskIndex	0		
}			
}			

Table 8.2.4.7.3.3-6: *RRCConnectionReestablishmentRequest* (step 7, Table 8.2.4.7.3.2-2)

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 8.2.4.7.3.3-7: *RRCConnectionReestablishment* (step 8, Table 8.2.4.7.3.2-2)

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 8.2.4.7.3.3-8: *RRCConnectionReconfiguration* (step 10, step 19 and step 28, Table 8.2.4.7.3.2-2)

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 8.2.4.7.3.3-9: *MeasurementReport* (step 13, Table 8.2.4.7.3.2-2)

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 {			
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 8.2.4.7.3.3-10: *RRCConnectionReconfiguration* (step 14, Table 8.2.4.7.3.2-2)

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

Table 8.2.4.7.3.3-11: *MobilityControlInfo* (Table 8.2.4.7.3.3-10)

Derivation Path: 36.308, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 1		
carrierFreq	Not present		
rach-ConfigDedicated SEQUENCE {			
ra-PreambleIndex	63		
ra-PRACH-MaskIndex	0		
}			
}			

Table 8.2.4.7.3.3-12: *RRCConnectionReestablishmentRequest* (step 16, Table 8.2.4.7.3.2-2)

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 4		
shortMAC-I	The same value as the 16 least significant bits of the XMAC-I value calculated by SS.		
}			
reestablishmentCause	handoverFailure		
}			
}			
}			

Table 8.2.4.7.3.3-13: *RRCConnectionReestablishment* (step 17, Table 8.2.4.7.3.2-2)

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	2		
}			
}			
}			
}			

Table 8.2.4.7.3.3-14: *MeasurementReport* (step 22, Table 8.2.4.7.3.2-2)

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 {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 11		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.2.4.7.3.3-15: *RRCConnectionReconfiguration* (step 23, Table 8.2.4.7.3.2-2)

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

Table 8.2.4.7.3.3-16: *MobilityControlInfo* (Table 8.2.4.7.3.3-15)

Derivation Path: 36.308, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 11		
carrierFreq	Not present		
rach-ConfigDedicated SEQUENCE {			
ra-PreambleIndex	63		
ra-PRACH-MaskIndex	0		
}			
}			

Table 8.2.4.7.3.3-17: *RRCConnectionReestablishmentRequest* (step 25, Table 8.2.4.7.3.2-2)

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 8.2.4.7.3.3-18: *RRCConnectionReestablishment* (step 26, Table 8.2.4.7.3.2-2)

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	3		
}			
}			
}			
}			

8.2.4.8 RRC connection reconfiguration / Handover / Failure / Re-establishment failure

8.2.4.8.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment and initial security activation procedure
and after receiving an RRCConnectionReconfiguration message including an IE
mobilityControlInformation indicating a different E-UTRA cell having attempted intra frequency
handover }
ensure that {
  when { UE detects handover failure and fails an RRC connection re-establishment procedure }
    then { UE enters the E-UTRA RRC_IDLE state and trigger TAU procedure in order to recover RRC
connection }
            }
```

8.2.4.8.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: 3GPP TS 36.331 clauses 5.3.5.4, 5.3.5.6, 5.3.7.2, 5.3.7.3, 5.3.7.4, 5.3.7.7 and 5.3.12.

[TS 36.331, clause 5.3.5.4]

...

If the *RRCConnectionReconfiguration* message includes the *mobilityControlInformation* 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 *mobilityControlInformation*;

1> request PDCP to initiate the PDCP Re-establishment procedure for all RBs that are established;

NOTE 2: The handling of the radio bearers after the successful completion of the L2 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 [8].

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

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

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

1> set the C-RNTI to the value of the *newUE-Identity*;

1> if the *eutra-CarrierFreq* is included:

2> consider the target cell to be one on the frequency indicated by the *eutra-CarrierFreq* with a physical cell identity indicated by the *targetCellIdentity*;

1> else:

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

1> if the *dl-Bandwidth* is included:

2> for the target cell, apply the downlink bandwidth indicated by the *dl-Bandwidth*;

1> else:

2> for the target cell, apply the same downlink bandwidth as for the current cell;

1> if the *ul-Bandwidth* is included:

2> for the target cell, apply the uplink bandwidth indicated by the *ul-Bandwidth*;

1> else:

2> for the target cell, apply the same uplink bandwidth as for the current cell;

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

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

2> apply the AS-derived keys associated with the AS-base key indicated by the *keyIndicator*;

2> configure lower layers to apply the indicated integrity protection algorithm, i.e. the indicated integrity protection configuration shall be applied to all subsequent messages received and sent by the UE in the target cell, including the message used to indicate the successful completion of the procedure;

2> configure lower layers to apply the indicated ciphering algorithm, i.e. the indicated ciphering configuration shall be applied to all subsequent messages received and sent by the UE in the target cell, including the message used to indicate the successful completion of the procedure;

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

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

1> synchronise to the DL of the target cell;

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

1> If MAC successfully completes the random access procedure:

2> stop timer T304;

2> If the *physicalConfigDedicated* is included in the *RRCConnectionReconfiguration* message:

3> If the UE needs the SFN of the target cell to apply the PUCCH and Sounding RS configuration:

4> apply the new PUCCH and Sounding RS configuration upon acquiring the SFN of the target cell;

3> else:

4> apply the new PUCCH and Sounding RS configuration;

2> indicate to PDCP to complete the PDCP Re-establishment procedure for all DRBs that are established, if any;

2> the procedure ends.

...

[TS 36.331, clause 5.3.5.6]

The UE shall:

1> If T304 expires (handover failure):

NOTE 1: Following T304 expiry dedicated preambles, if provided within the *rach-ConfigDedicated*, are not available for use by the UE anymore.

2> revert back to the configuration used in the source cell, excluding the physical layer configuration;

NOTE 2: The UE reverts to the RRC configuration as well as the layer 2 configuration (PDCP/RLC/MAC) used in the source cell.

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 security has been activated. The UE initiates the procedure when one of the following conditions is met:

...

1> upon handover failure, in accordance with 5.3.5.6; or

...

Upon initiation of the procedure, the UE shall:

...

1> start timer T311;

1> request PDCP to initiate the PDCP Re-establishment procedure for all RBs that are established;

NOTE 1: The handling of the radio bearers after the successful completion of the L2 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 [8].

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

1> select a suitable cell in accordance with the cell selection process as specified in [4];

[TS 36.331, clause 5.3.7.3]

...

2> initiate transmission of the *RRCConnectionReestablishmentRequest* message in accordance with 5.3.7.4;

...

[TS 36.331, clause 5.3.7.4]

The UE shall set the contents of *RRCConnectionReestablishmentRequest* message as follows:

1> set the IE *ue-Identity* as follows:

2> set the *c-RNTI* to the C-RNTI used in the source cell (handover failure case) or used in the cell in which the trigger for the re-establishment occurred (other cases);

2> set the *cellIdentity* to the Physical layer identity of the source cell (handover failure case) or of the cell in which the trigger for the re-establishment occurred (other cases);

2> set the *shortMAC-I* to the 16 least significant bits of the MAC-I calculated:

3> over the concatenation of the ASN.1 encoded *CellIdentity* of the current cell, *PhysicalCellIdentity* of the cell the UE was connected to prior to the failure and C-RNTI that the UE had in the cell it was connected to prior to the failure;

3> with the integrity protection key and integrity protection algorithm that was used in the cell the UE was connected to prior to the failure; and

3> with all input bits for COUNT, BEARER and DIRECTION set to binary ones.

1> set the IE *reestablishmentCause* as follows:

...

2> else if the re-establishment procedure was initiated due to handover failure as specified in 5.3.5.6 (intra-LTE handover failure) or 5.4.3.5 (inter-RAT mobility from EUTRA failure):

3> set the *reestablishmentCause* to the value '*handoverFailure*';

...

The UE shall submit the *RRCConnectionReestablishmentRequest* message to lower layers for transmission.

[TS 36.331, clause 5.3.7.7]

Upon T311 expiry, the UE shall:

1> perform the actions upon moving from RRC_CONNECTED to RRC_IDLE as specified in 5.3.12.

...

[TS 36.331, clause 5.3.12]

Upon moving from RRC_CONNECTED to RRC_IDLE, the UE shall:

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

...

1> stop all timers that are running except T320;

1> release all radio resources, including release of the RLC entity and the associated PDCP entity for all established RBs;

1> indicate the release of the RRC connection to upper layers;

1> enter RRC_IDLE.

8.2.4.8.3 Test description

8.2.4.8.3.1 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].

8.2.4.8.3.2 Test procedure sequence

Table 8.2.4.8.3.2-1 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, 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 8.2.4.8.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 2	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-85	-91	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)
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 > M1)
T2	Cell-specific RS EPRE	dBm/15 kHz	-85	"Off"	The power level values are such that $Srxlev_{Cell\ 1}$ > $Srxlev_{Cell\ 2}$ and $Srxlev_{Cell\ 2}$ <0.(NOTE 1).
NOTE 1: Power level "Off" is defined in TS36.508 Table 6.2.2.1-1.					

Table 8.2.4.8.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup intra frequency measurement on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 1 and Cell 2 parameters according to the row "T1" in table 8.2.4.8.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP and RSRQ value for Cell 2.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 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 8.2.4.8.3.2-3 should take place.	-	-	-	-
6	The SS changes Cell 1 and Cell 2 parameters according to the row "T2" in table 8.2.4.8.3.2-1.	-	-	-	-
7	The UE transmits an *RRCConnectionReestablishmentRequest* message on Cell 1.	-->	*RRCConnectionReestablishmentRequest*	-	-
8	The SS does not respond to any *RRCConnectionReestablishmentRequest* message and waits for 1s to ensure that T301 expires and the UE goes to RRC_IDLE state on Cell 1.	-	-	-	-
9-13	The UE will perform TAU procedure based on steps 1 to 5 of subclause 6.4.2.7 in TS 36.508 on Cell 1. NOTE: The UE performs a TAU procedure due to NAS signalling connection recovery.	-	-	-	-
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	-
-	At the end of this test procedure sequence, the UE is in end state E-UTRA connected (E2_T3440) according to TS 36.508.	-	-	-	-

Table 8.2.4.8.3.2-3: 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.	-	-	-	-

8.2.4.8.3.3 Specific message contents

Table 8.2.4.8.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.8.3.2-2)

Derivation path: 36.508 Table 4.6.1-8, condition MEAS

Table 8.2.4.8.3.3-1A: *MeasConfig* (Table 8.2.4.8.3.3-1)

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 8.2.4.8.3.3-2: *MeasurementReport* (step 4, Table 8.2.4.8.3.2-2)

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[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.2.4.8.3.3-3: *RRCConnectionReconfiguration* (step 5, Table 8.2.4.8.3.2-2)

Derivation path: 36.508 Table 4.6.1-8, condition HO

Table 8.2.4.8.3.3-3A: *MobilityControlInfo* (Table 8.2.4.8.3.3-4)

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		
}			

Table 8.2.4.8.3.3-4: Void

Table 8.2.4.8.3.3-5: *RRCConnectionReestablishmentRequest* (step 7, Table 8.2.4.8.3.2-2)

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		
}			
}			
}			

8.2.4.9 RRC connection reconfiguration / Handover / Inter-band blind handover / Success

8.2.4.9.1 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 mobilityControlInfo
indicating an E-UTRA frequency on different frequency band }
    then { UE transmits an RRCConnectionReconfigurationComplete message }
            }
```

8.2.4.9.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.5.4, 5.3.10.4 and 5.3.10.6.

[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 *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 5.3.10.4]

The UE shall:

1> reconfigure the MAC main configuration in accordance with the received *mac-MainConfig*;

[TS 36.331, clause 5.3.10.6]

The UE shall:

1> reconfigure the physical channel configuration in accordance with the received *physicalConfigDedicated*;

1> if the *antennaInfo* is included and set to '*explicitValue*':

2> if the configured *transmissionMode* is not '*tm3*' or '*tm4*' release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

1> else if the *antennaInfo* is included and set to '*defaultValue*':

2> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

8.2.4.9.3 Test description

8.2.4.9.3.1 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].

8.2.4.9.3.2 Test procedure sequence

Table 8.2.4.9.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to order the UE to perform inter band handover to Cell 10.	<--	*RRCConnectionReconfiguration*	-	-
2	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 10?	-->	*RRCConnectionReconfigurationComplete*	1	P
3	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	-

8.2.4.9.3.3 Specific message contents

Table 8.2.4.9.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.9.3.2-1)

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

Table 8.2.4.9.3.3-2: *MobilityControlInfo* (Table 8.2.4.9.3.3-1)

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		
}			
}			

8.2.4.10 RRC connection reconfiguration / Handover (between FDD and TDD)

8.2.4.10.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment and initial security activation procedure
in FDD mode}
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including an IE
mobilityControlInformation with TDD configuration parameters included }
    then { UE transmits an RRCConnectionReconfigurationComplete message }
           }
```

(2)

```
with { UE having completed the radio bearer establishment and initial security activation procedure
in TDD mode}
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including an IE
mobilityControlInformation with FDD configuration parameters included }
    then { UE transmits an RRCConnectionReconfigurationComplete message }
           }
```

8.2.4.10.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: 3GPP TS 36.331 clauses 5.3.5.4, 5.3.10.4 and 5.3.10.6.

[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;

NOTE 4: 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 5.3.10.4]

The UE shall:

1> reconfigure the MAC main configuration in accordance with the received *mac-MainConfig*;

[TS 36.331, clause 5.3.10.6]

The UE shall:

1> reconfigure the physical channel configuration in accordance with the received *physicalConfigDedicated*;

1> if the *antennaInfo* is included and set to '*explicitValue*':

2> if the configured *transmissionMode* is not '*tm3*' or '*tm4*' release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

1> else if the *antennaInfo* is included and set to '*defaultValue*':

2> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

8.2.4.10.3 Test description

8.2.4.10.3.1 Pre-test conditions

System Simulator:

- Cell 1 in FDD and Cell 10 in TDD
- 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].

8.2.4.10.3.2 Test procedure sequence

Table 8.2.4.10.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message including TDD-Config to order the UE to perform inter band handover to Cell 10.	<--	*RRCConnectionReconfiguration*	-	-
2	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 10?	-->	*RRCConnectionReconfigurationComplete*	1	P
3	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	-
4	The SS transmits an *RRCConnectionReconfiguration* message without including TDD-Config to order the UE to perform inter band handover to Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
5	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 1?	-->	*RRCConnectionReconfigurationComplete*	2	P
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?	-	-	2	-

8.2.4.10.3.3 Specific message content

Table 8.2.4.10.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.10.3.2-1)

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

Table 8.2.4.10.3.3-2: *MobilityControlInfo* (Table 8.2.4.10.3.3-1)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo-HO ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 10		
carrierFreq SEQUENCE {			
dl-CarrierFreq	Same downlink EARFCN as used for Cell 10		
ul-CarrierFreq	Not present		
}			
carrierBandwidth SEQUENCE {			
dl-Bandwidth	Same downlink system bandwidth as used for Cell 10		
ul-Bandwidth	Not present		
}			
additionalSpectrumEmission	Same additionalSpectrumEmission as used for Cell 10		
radioResourceConfigCommon	RadioResourceConfigCommon-withTDDconfig		
}			

Table 8.2.4.10.3.3-2A: RadioResourceConfigCommon-withTDDconfig (Table 8.2.4.10.3.3-2)

Derivation Path: 36.508, Table 4.6.3-13			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigCommon-DEFAULT ::= SEQUENCE {			
tdd-Config	TDD-Config-DEFAULT		
}			

Table 8.2.4.10.3.3-3: *RRCConnectionReconfiguration* (step 4, Table 8.2.4.10.3.2-1)

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

Table 8.2.4.10.3.3-4: *MobilityControlInfo* (Table 8.2.4.10.3.3-3)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo-HO ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 1		
carrierFreq SEQUENCE {			
dl-CarrierFreq	Same downlink EARFCN as used for Cell 1		
ul-CarrierFreq	Same uplink EARFCN as used for Cell 1		
}			
carrierBandwidth SEQUENCE {			
dl-Bandwidth	Same downlink system bandwidth as used for Cell 1		
ul-Bandwidth	Same uplink system bandwidth as used for Cell 1		
}			
additionalSpectrumEmission	Same additionalSpectrumEmission as used for Cell 1		
radioResourceConfigCommon	RadioResourceConfigCommon-withoutTDDconfig		
}			

Table 8.2.4.10.3.3-5: RadioResourceConfigCommon-withoutTDDconfig (Table 8.2.4.10.3.3-4)

Derivation Path: 36.508, Table 4.6.3-13			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigCommon-DEFAULT ::= SEQUENCE {			
tdd-Config	Not present		
}			

8.2.4.11 Void

8.2.4.12 RRC connection reconfiguration / Handover / Setup and release of MIMO

8.2.4.12.1 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 mobilityControlInfo
indicating a cell with 2 antenna ports }
    then { UE transmits an RRCConnectionReconfigurationComplete message }
            }
```

(2)

```
with { UE having completed the radio bearer establishment and initial security activation procedure
}
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo
indicating a cell with 1 antenna port }
    then { UE transmits an RRCConnectionReconfigurationComplete message }
            }
```

8.2.4.12.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: 3GPP TS 36.331 clauses 5.3.5.4 and 5.3.10.6.

[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> 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.

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> 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> 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> 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;

NOTE 4: 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 5.3.10.6]

The UE shall:

1> reconfigure the physical channel configuration in accordance with the received *physicalConfigDedicated*;

1> if the *antennaInfo* is included and set to '*explicitValue*':

2> if the configured *transmissionMode* is not '*tm3*' or '*tm4*' or '*tm8*':

3> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

2> if the configured *transmissionMode* is '*tm8*' and *pmi-RI-Report* is not present:

3> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

1> else if the *antennaInfo* is included and set to '*defaultValue*':

2> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

8.2.4.12.3 Test description

8.2.4.12.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 2 (2 antenna ports MIMO)

UE:

None.

Preamble:

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

8.2.4.12.3.2 Test procedure sequence

Table 8.2.4.12.3.2-0 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 8.2.4.12.3.2-0: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 2
T0	Cell-specific RS EPRE	dBm/15k Hz	-91	-85
T1	Cell-specific RS EPRE	dBm/15k Hz	-85	-91

Table 8.2.4.12.3.2-1: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to order the UE to perform intra frequency handover to Cell 2.	<--	*RRCConnectionReconfiguration*	-	-
2	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 2?	-->	*RRCConnectionReconfigurationComplete*	1	P
3	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	-
3A	The SS changes Cell 1 and Cell 2 parameters according to the row "T1" in table 8.2.4.12.3.2-0.	-	-	-	-
4	The SS transmits an *RRCConnectionReconfiguration* message to order the UE to perform intra frequency handover to Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
5	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 1?	-->	*RRCConnectionReconfigurationComplete*	2	P
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?	-	-	2	-

8.2.4.12.3.3 Specific message content

Table 8.2.4.12.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.4.2.12.3.2-1)

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

Table 8.2.4.12.3.3-2: *MobilityControlInfo* (Table 8.2.4.12.3.3-1)

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

Table 8.2.4.12.3.3-3: *RadioResourceConfigCommon-DEFAULT* (Table 8.2.4.12.3.3-2)

Derivation Path: 36.508, Table 4.6.3-13, condition 2TX

Table 8.2.4.12.3.3-4: *RRCConnectionReconfiguration* (step 4, Table 8.4.2.12.3.2-1)

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

Table 8.2.4.12.3.3-5: *MobilityControlInfo* (Table 8.2.4.12.3.3-4)

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

Table 8.2.4.12.3.3-6: *RadioResourceConfigCommon-DEFAULT* (Table 8.2.4.12.3.3-5)

Derivation Path: 36.508, Table 4.6.3-1			
Information Element	**Value/remark**	**Comment**	**Condition**
antennaInfoCommon SEQUENCE {			
antennaPortsCount	an1		
}			

8.2.4.13 RRC connection reconfiguration / Handover / Success (with measurement) / Inter-band

8.2.4.13.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment and initial security activation procedure
and performed the inter-band measurement }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo
indicating an E-UTRA frequency on different frequency band }
    then { UE transmits an RRCConnectionReconfigurationComplete message }
            }
```

8.2.4.13.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.5.4, 5.3.10.4 and 5.3.10.6.

[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> 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> 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 5.3.10.4]

The UE shall:

1> reconfigure the MAC main configuration in accordance with the received *mac-MainConfig*;

[TS 36.331, clause 5.3.10.6]

The UE shall:

1> reconfigure the physical channel configuration in accordance with the received *physicalConfigDedicated*;

1> if the *antennaInfo* is included and set to '*explicitValue*':

2> if the configured *transmissionMode* is not '*tm3*' or '*tm4*' or '*tm8*':

3> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

2> if the configured *transmissionMode* is '*tm8*' and *pmi-RI-Report* is not present:

3> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

1> else if the *antennaInfo* is included and set to '*defaultValue*':

2> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

8.2.4.13.3 Test description

8.2.4.13.3.1 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].

8.2.4.13.3.2 Test procedure sequence

Table 8.2.4.13.3.2-1 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 8.2.4.13.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 10	Remark
T0	Cell-specific RS EPRE	dBm/15k Hz	-85	-97	The power level values are such that measurement results for Cell 1 (M1) and Cell 10 (M10) satisfy exit condition for event A3 (M10 < M1).
T1	Cell-specific RS EPRE	dBm/15k Hz	-85	-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).

Table 8.2.4.13.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to setup inter-band measurement.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 1 and Cell 10 parameters according to the row "T1" in table 8.2.4.13.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP, RSRQ value for Cell 10.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to order the UE to perform inter-band handover to Cell 10.	<--	*RRCConnectionReconfiguration*	-	-
6	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 10 to confirm the successful completion of the inter-band handover?	-->	*RRCConnectionReconfigurationComplete*	1	P
7	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicates that the UE is in E-UTRA RRC_CONNECTED state on Cell 10?	-	-	1	-

8.2.4.13.3.3 Specific message contents

Table 8.2.4.13.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.13.3.2-2)

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

Table 8.2.4.13.3.3-2: *MeasConfig* (Table 8.2.4.13.3.3-1)

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 {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f5		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

Table 8.2.4.13.3.3-3: *MeasurementReport* (step 4, Table 8.2.4.13.3.2-2)

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 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 8.2.4.13.3.3-4: *RRCConnectionReconfiguration* (step 5, Table 8.2.4.13.3.2-2)

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

Table 8.2.4.13.3.3-5: *MobilityControlInfo* (Table 8.2.4.13.3.3-4)

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		
}			
}			

8.2.4.13a RRC connection reconfiguration / Handover / Success (with measurement) / Inter-band / Between FDD and TDD

8.2.4.13a.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA FDD RRC_CONNECTED state and having completed the radio bearer establishment and
initial security activation procedure and performed the inter band LTE TDD measurement }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo
indicating a different E-UTRA TDD frequency }
    then { UE transmits an RRCConnectionReconfigurationComplete message }
           }
```

(2)

```
with { UE in E-UTRA TDD RRC_CONNECTED state and having completed the radio bearer establishment and
initial security activation procedure and performed the inter band LTE FDD measurement }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo
indicating a different E-UTRA FDD frequency }
    then { UE transmits an RRCConnectionReconfigurationComplete message }
           }
```

8.2.4.13a.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.5.4, 5.3.10.4 and 5.3.10.6.

[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 5.3.10.4]

The UE shall:

1> reconfigure the MAC main configuration in accordance with the received *mac-MainConfig*;

[TS 36.331, clause 5.3.10.6]

The UE shall:

1> reconfigure the physical channel configuration in accordance with the received physicalConfigDedicated;

1> if the antennaInfo is included and set to 'explicitValue':

2> if the configured *transmissionMode* is not '*tm3*' or '*tm4*' release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

1> else if the *antennaInfo* is included and set to '*defaultValue*':

2> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

8.2.4.13a.3 Test description

8.2.4.13a.3.1 Pre-test conditions

System Simulator:

- Cell 1 is FDD cell and Cell 28 is TDD cell.
- Each cell has only a single PLMN identity. The PLMNs are identified in the test by the identifiers in Table 8.2.4.13a.3.1-1.

Table 8.2.4.13a.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 8.2.4.13a.3.3-9.

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

8.2.4.13a.3.2 Test procedure sequence

Table 8.2.4.13a.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 8.2.4.13a.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 28	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	-97	The power level values are such that measurement results for Cell 1 (M1) and Cell 28 (M28) satisfy exit condition for event A3 (M28 < M1).
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-73	The power level values are such that measurement results for Cell 1 (M1) and Cell 28 (M28) satisfy entry condition for event A3 (M28 > M1).
T2	Cell-specific RS EPRE	dBm/15kHz	-73	-85	The power level values are such that measurement results for Cell 1 (M1) and Cell 28 (M28) satisfy entry condition for event A3 (M1 > M28).

Table 8.2.4.13a.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 inter band measurement.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 28 power level according to the row "T1" in table 8.2.4.13a.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP, RSRQ values for Cell 28.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to order the UE to perform inter band handover to Cell 28.	<--	*RRCConnectionReconfiguration*	-	-
6	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 28 to confirm the successful completion of the inter band handover?	-->	*RRCConnectionReconfigurationComplete*	1	P
6A	The UE transmits a TRACKING AREA UPDATE REQUEST message on Cell 28.	-	-	-	-
6B	SS responds with a TRACKING AREA UPDATE ACCEPT message. NOTE: The TAU is accepted with PLMN1 listed as an Equivalent PLMN.	-	-	-	-
6C	The UE transmits a TRACKING AREA UPDATE COMPLETE message.	-	-	-	-
7	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 28?	-	-	1	-
8	The SS transmits an *RRCConnectionReconfiguration* message on Cell 28 to setup inter band measurement.	<--	*RRCConnectionReconfiguration*	-	-
9	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 28.	-->	*RRCConnectionReconfigurationComplete*	-	-
10	The SS changes Cell 1 and Cell 28 power levels according to the row "T2" in table 8.2.4.13a.3.2-1.	-	-	-	-
11	The UE transmits a *MeasurementReport* message on Cell 28 to report event A3 with the measured RSRP, RSRQ values for Cell 1.	-->	*MeasurementReport*	-	-
12	The SS transmits an *RRCConnectionReconfiguration* message on Cell 28 to order the UE to perform inter band handover to Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
13	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 1 to confirm the successful completion of the inter band handover?	-->	*RRCConnectionReconfigurationComplete*	2	P
13A	The UE transmits a TRACKING AREA UPDATE REQUEST message on Cell 1.	-	-	-	-
13B	SS responds with a TRACKING AREA UPDATE ACCEPT message. NOTE: The TAU is accepted with PLMN2 listed as an Equivalent PLMN.	-	-	-	-
13C	The UE transmits a TRACKING AREA UPDATE COMPLETE message.	-	-	-	-
14	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicates that the UE is in E-UTRA RRC_CONNECTED state on Cell 1?	-	-	2	-

8.2.4.13a.3.3 Specific message contents

Table 8.2.4.13a.3.3-1: *RRCConnectionReconfiguration* (step 1 and step 8, Table 8.2.4.13a.3.2-2)

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

Table 8.2.4.13a.3.3-2: *MeasConfig* (step 1, Table 8.2.4.13a.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-f6		
measObject[2]	MeasObjectEUTRA-GENERIC(f6)		
}			
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-f6		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

Table 8.2.4.13a.3.3-3: *MeasurementReport* (step 4, Table 8.2.4.13a.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 28		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.2.4.13a.3.3-4: *RRCConnectionReconfiguration* (step 5 and step 12, Table 8.2.4.13a.3.2-2)

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

Table 8.2.4.13a.3.3-5: *MobilityControlInfo* (step 5, Table 8.2.4.13a.3.3-4)

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 8.2.4.13a.3.3-6: *MeasConfig* (step 8, Table 8.2.4.13a.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 entry		
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 {	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 8.2.4.13a.3.3-7: *MeasurementReport* (step 11, Table 8.2.4.13a.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 28	
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 8.2.4.13a.3.3-8: *MobilityControlInfo* (step 12, Table 8.2.4.13a.3.3-4)

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 downlink EARFCN as used for Cell 1		
ul-CarrierFreq	Not present		
}			
}			

Table 8.2.4.13a.3.3-9: ATTACH ACCEPT for Cell 1 (preamble)

Derivation path: 36.508 Table 4.7.2-1			
Information Element	**Value/Remark**	**Comment**	**Condition**
Equivalent PLMNs	PLMN2		

Table 8.2.4.13a.3.3-10: TRACKING AREA UPDATE ACCEPT for Cell 28 (step 6B, Table 8.2.4.13a.3.2-2)

Derivation path: 36.508 Table 4.7.2-24			
Information Element	**Value/Remark**	**Comment**	**Condition**
Equivalent PLMNs	PLMN1		

Table 8.2.4.13a.3.3-11: TRACKING AREA UPDATE ACCEPT for Cell 1 (step 13B, Table 8.2.4.13a.3.2-2)

Derivation path: 36.508 Table 4.7.2-24			
Information Element	**Value/Remark**	**Comment**	**Condition**
Equivalent PLMNs	PLMN2		

8.2.4.14 RRC connection reconfiguration / Handover / Failure / Re-establishment successful / Inter-band

8.2.4.14.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment and initial security activation procedure
and after receiving an RRCConnectionReconfiguration message including a mobilityControlInfo
indicating a different E-UTRA cell having attempted inter-band handover }
ensure that {
  when { UE detects handover failure and the target cell is selectable }
    then { UE performs an RRC connection re-establishment procedure and remains in the E-UTRA
RRC_CONNECTED state }
            }
```

8.2.4.14.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.5.4, 5.3.5.6, 5.3.7.2, 5.3.7.4, 5.3.7.5, 5.3.10.4 and 5.3.10.6.

[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> 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> 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 4: 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> store the following handover failure information in *VarRLF-Report* by setting its fields as follows:
3> clear the information included in *VarRLF-Report*, if any;
3> set the *plmn-IdentityList* to include the list of EPLMNs stored by the UE (i.e. includes the RPLMN);
3> set the *measResultLastServCell* to include the RSRP and RSRQ, if available, of the PCell based on measurements collected up to the moment the UE detected handover failure;

…

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 handover failure, in accordance with 5.3.5.6; or

...

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 5.3.7.4]

The UE shall set the contents of *RRCConnectionReestablishmentRequest* message as follows:

1> set the *ue-Identity* as follows:

2> set the *c-RNTI* to the C-RNTI used in the source cell (handover and mobility from E-UTRA failure) or used in the cell in which the trigger for the re-establishment occurred (other cases);

2> set the *physCellId* to the physical cell identity of the source cell (handover and mobility from E-UTRA failure) or of the cell in which the trigger for the re-establishment occurred (other cases);

2> set the *shortMAC-I* to the 16 least significant bits of the MAC-I calculated:

3> over the ASN.1 encoded as per section 8 (i.e., a multiple of 8 bits) *VarShortMAC-Input*;

3> with the K_{RRCint} key and integrity protection algorithm that was used in the source cell (handover and mobility from E-UTRA failure) or of the cell in which the trigger for the re-establishment occurred (other cases); and

3> with all input bits for COUNT, BEARER and DIRECTION set to binary ones;

1> set the *reestablishmentCause* as follows:

2> if the re-establishment procedure was initiated due to reconfiguration failure as specified in 5.3.5.5 (the UE is unable to comply with the reconfiguration):

3> set the *reestablishmentCause* to the value '*reconfigurationFailure*';

2> else if the re-establishment procedure was initiated due to handover failure as specified in 5.3.5.6 (intra-LTE handover failure) or 5.4.3.5 (inter-RAT mobility from EUTRA failure):

3> set the *reestablishmentCause* to the value '*handoverFailure*';

...

The UE shall submit the *RRCConnectionReestablishmentRequest* message to lower layers for transmission.

[TS 36.331, clause 5.3.7.5]

NOTE 5: Prior to this, lower layer signalling is used to allocate a C-RNTI. For further details see TS 36.321 [6];

The UE shall:

1> stop timer T301;

1> re-establish PDCP for SRB1;

1> re-establish RLC for SRB1;

1> perform the radio resource configuration procedure in accordance with the received *radioResourceConfigDedicated* and as specified in 5.3.10;

1> resume SRB1;

NOTE 6: E-UTRAN should not transmit any message on SRB1 prior to receiving the *RRCConnectionReestablishmentComplete* message.

1> update the K_{eNB} key based on the K_{ASME} key to which the current K_{eNB} is associated, using the *nextHopChainingCount* value indicated in the *RRCConnectionReestablishment* message, as specified in TS 33.401 [32];

1> store the *nextHopChainingCount* value;

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

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

1> configure lower layers to activate integrity protection using the previously configured algorithm and the K_{RRCint} key immediately, i.e., integrity protection 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 ciphering using the previously configured algorithm, the K_{RRCenc} key and the K_{UPenc} key immediately, i.e., ciphering 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> set the content of *RRCConnectionReestablishmentComplete* message as follows:

2> if the UE has radio link failure or handover failure information available in *VarRLF-Report* and if the RPLMN is included in *plmn-IdentityList* stored in *VarRLF-Report*:

3> include the *rlf-InfoAvailable*;

…

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

1> perform the measurement identity autonomous removal as specified in 5.5.2.2a;

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

[TS 36.331, clause 5.3.10.4]

The UE shall:

1> reconfigure the MAC main configuration in accordance with the received *mac-MainConfig*;

[TS 36.331, clause 5.3.10.6]

The UE shall:

1> reconfigure the physical channel configuration in accordance with the received *physicalConfigDedicated*;

1> if the *antennaInfo* is included and set to '*explicitValue*':

2> if the configured *transmissionMode* is not '*tm3*' or '*tm4*' or '*tm8*':

3> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

2> if the configured *transmissionMode* is '*tm8*' and *pmi-RI-Report* is not present:

3> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

1> else if the *antennaInfo* is included and set to '*defaultValue*':

2> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

8.2.4.14.3 Test description

8.2.4.14.3.1 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].

8.2.4.14.3.2 Test procedure sequence

Table 8.2.4.14.3.2-1 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 8.2.4.14.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 10	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 10 (M10) satisfy exit condition for event A3 (M10 < 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 10 (M10) satisfy entry condition for event A3 (M10 > M1).
T2	Cell-specific RS EPRE	dBm/15kHz	"Off"	-79	The power level values are assigned to satisfy SrxlevCell 1 < 0 such that selecting Cell 10 is guaranteed (NOTE 1).
NOTE 1: Power level “Off” is defined in TS36.508 Table 6.2.2.1-1.					

Table 8.2.4.14.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup inter-band measurement on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 1 and Cell 10 parameters according to the row "T1" in table 8.2.4.14.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP, RSRQ value for Cell 10.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to order the UE to perform inter-band handover to Cell 10.	<--	*RRCConnectionReconfiguration*	-	-
-	EXCEPTION: In parallel to the events described in step 6 the steps specified in Table 8.2.4.14.3.2-3 should take place.	-	-	-	-
6	The SS changes Cell 1 and Cell 10 parameters according to the row "T2" in table 8.2.4.14.3.2-1.	-	-	-	-
7	Check: Does the UE transmit an *RRCConnectionReestablishmentRequest* message on Cell 10?	-->	*RRCConnectionReestablishmentRequest*	1	P
8	The SS transmits an *RRCConnectionReestablishment* message to resume SRB1 operation and re-activate security on Cell 10.	<--	*RRCConnectionReestablishment*	-	-
9	The UE transmits an *RRCConnectionReestablishmentComplete* message on Cell 10.	-->	*RRCConnectionReestablishmentComplete*	-	-
10	The SS transmits an *RRCConnectionReconfiguration* message to resume existing radio bearer on Cell 10.	<--	*RRCConnectionReconfiguration*	-	-
11	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 10.	-->	*RRCConnectionReconfigurationtComplete*	-	-
12	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	-

Table 8.2.4.14.3.2-3: 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.	-	-	-	-

8.2.4.14.3.3 Specific message contents

Table 8.2.4.14.3.3-1: *SystemInformationBlockType2* for Cell 10 (preamble and all the steps in Table 8.2.4.14.3.2-2)

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 8.2.4.14.3.3-2: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.14.3.2-2)

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

Table 8.2.4.14.3.3-3: *MeasConfig* (Table 8.2.4.14.3.3-2)

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 {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f5		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

Table 8.2.4.14.3.3-4: *MeasurementReport* (step 4, Table 8.2.4.14.3.2-2)

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 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 8.2.4.14.3.3-5: *RRCConnectionReconfiguration* (step 5, Table 8.2.4.14.3.2-2)

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

Table 8.2.4.14.3.3-6: *MobilityControlInfo* (Table 8.2.4.14.3.3-5)

Derivation Path: 36.308, 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		
}			
rach-ConfigDedicated SEQUENCE {			
ra-PreambleIndex	63		
ra-PRACH-MaskIndex	0		
}			
}			

Table 8.2.4.14.3.3-7: *RRCConnectionReestablishmentRequest* (step 7, Table 8.2.4.14.3.2-2)

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 8.2.4.14.3.3-8: *RRCConnectionReestablishmentComplete* (step 9, Table 8.2.4.14.3.2-2)

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		Rel-8 or Rel-9
nonCriticalExtension SEQUENCE {			Rel-10 and above
rlf-InfoAvailable-r9	true		
nonCriticalExtension	Not present		
}			
}			
}			
}			

Table 8.2.4.14.3.3-9: *RRCConnectionReconfiguration* (step 10, Table 8.2.4.14.3.2-2)

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		
}			
}			
}			
}			

8.2.4.14a RRC connection reconfiguration / Handover / Failure / Re-establishment successful / Inter-band / Between FDD and TDD

8.2.4.14a.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA FDD RRC_CONNECTED state and having completed the radio bearer establishment and
initial security activation procedure 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 initial E-UTRA TDD cell is selectable }
    then { UE performs an RRC connection re-establishment procedure and remains in the E-UTRA
RRC_CONNECTED state on the E-UTRA TDD cell }
            }
```

(2)

```
with { UE in E-UTRA FDD RRC_CONNECTED state and having transmitted an
RRCConnectionReestablishmentRequest message on E-UTRA TDD cell }
ensure that {
  when { UE receives an RRCConnectionReestablishment message with a nextHopChainingCount which is
same as the NCC associated with the currently active K_eNB }
    then { UE derives new K_eNB from the currently active K_eNB }
            }
```

(3)

```
with { UE in E-UTRA TDD RRC_CONNECTED state and having completed the radio bearer establishment and
initial security activation procedure 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 initial E-UTRA FDD cell is selectable }
    then { UE performs an RRC connection re-establishment procedure and remains in the E-UTRA
RRC_CONNECTED state on the E-UTRA FDD cell }
            }
```

(4)

```
with { UE in E-UTRA TDD RRC_CONNECTED state and having transmitted an
RRCConnectionReestablishmentRequest message on E-UTRA FDD cell }
ensure that {
  when { UE receives an RRCConnectionReestablishment message with a nextHopChainingCount which is
different from the NCC associated with the currently active K_eNB }
    then { UE derives new K_eNB from the nextHopChainingCount }
            }
```

8.2.4.14a.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.5.4, 5.3.5.6, 5.3.7.2, 5.3.7.4, 5.3.7.5, 5.3.10.4 and 5.3.10.6.

[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 5.3.5.6]

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 handover failure, in accordance with 5.3.5.6; or

...

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 5.3.7.4]

The UE shall set the contents of *RRCConnectionReestablishmentRequest* message as follows:

1> set the *ue-Identity* as follows:

2> set the *c-RNTI* to the C-RNTI used in the source cell (handover and mobility from E-UTRA failure) or used in the cell in which the trigger for the re-establishment occurred (other cases);

2> set the *physCellId* to the physical cell identity of the source cell (handover and mobility from E-UTRA failure) or of the cell in which the trigger for the re-establishment occurred (other cases);

2> set the *shortMAC-I* to the 16 least significant bits of the MAC-I calculated:

3> over the ASN.1 encoded as per section 8 (i.e., a multiple of 8 bits) *VarShortMAC-Input*;

3> with the K_{RRCint} key and integrity protection algorithm that was used in the source cell (handover and mobility from E-UTRA failure) or of the cell in which the trigger for the re-establishment occurred (other cases); and

3> with all input bits for COUNT, BEARER and DIRECTION set to binary ones;

1> set the *reestablishmentCause* as follows:

2> if the re-establishment procedure was initiated due to reconfiguration failure as specified in 5.3.5.5 (the UE is unable to comply with the reconfiguration):

3> set the *reestablishmentCause* to the value '*reconfigurationFailure*';

2> else if the re-establishment procedure was initiated due to handover failure as specified in 5.3.5.6 (intra-LTE handover failure) or 5.4.3.5 (inter-RAT mobility from EUTRA failure):

3> set the *reestablishmentCause* to the value '*handoverFailure*';

...

The UE shall submit the *RRCConnectionReestablishmentRequest* message to lower layers for transmission.

[TS 36.331, clause 5.3.7.5]

NOTE: Prior to this, lower layer signalling is used to allocate a C-RNTI. For further details see TS 36.321 [6];

The UE shall:

1> stop timer T301;

1> re-establish PDCP for SRB1;

1> re-establish RLC for SRB1;

1> perform the radio resource configuration procedure in accordance with the received *radioResourceConfigDedicated* and as specified in 5.3.10;

1> resume SRB1;

1> update the K_{eNB} key based on the K_{ASME} key to which the current K_{eNB} is associated, using the *nextHopChainingCount* value indicated in the *RRCConnectionReestablishment* message, as specified in TS 33.401 [32];

1> store the *nextHopChainingCount* value;

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

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

1> configure lower layers to activate integrity protection using the previously configured algorithm and the K_{RRCint} key immediately, i.e., integrity protection 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 ciphering using the previously configured algorithm, the K_{RRCenc} key and the K_{UPenc} key immediately, i.e., ciphering 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> submit the *RRCConnectionReestablishmentComplete* message to lower layers for transmission, upon which the procedure ends;

[TS 36.331, clause 5.3.10.4]

The UE shall:

1> reconfigure the MAC main configuration in accordance with the received *mac-MainConfig*;

[TS 36.331, clause 5.3.10.6]

The UE shall:

1> reconfigure the physical channel configuration in accordance with the received *physicalConfigDedicated*;

1> if the *antennaInfo* is included and set to '*explicitValue*':

2> if the configured *transmissionMode* is not '*tm3*' or '*tm4*' release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

1> else if the *antennaInfo* is included and set to '*defaultValue*':

2> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

8.2.4.14a.3 Test description

8.2.4.14a.3.1 Pre-test conditions

System Simulator:

- Cell 1 is FDD cell and Cell 28 is TDD cell.
- Cell 28 has a valid UE context
- Each cell has only a single PLMN identity. The PLMNs are identified in the test by the identifiers in Table 8.2.4.14a.3.1-1.

Table 8.2.4.14a.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 8.2.4.14a.3.3-15.
- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.2.4.14a.3.2 Test procedure sequence

Table 8.2.4.14a.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 8.2.4.14a.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 28	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	-97	The power level values are such that measurement results for Cell 1 (M1) and Cell 28 (M28) satisfy exit condition for event A3 (M28 < M1).
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-73	The power level values are such that measurement results for Cell 1 (M1) and Cell 28 (M28) satisfy entry condition for event A3 (M28 > M1).
T2	Cell-specific RS EPRE	dBm/15kHz	"Off"	-73	The power level values are assigned to satisfy SrxlevCell 1 < 0 such that selecting Cell 28 is guaranteed (NOTE 1).
T3	Cell-specific RS EPRE	dBm/15kHz	-85	-97	The power level values are such that measurement results for Cell 1 (M1) and Cell 28 (M28) satisfy entry condition for event A3 (M1> M28).
T4	Cell-specific RS EPRE	dBm/15kHz	-85	"Off"	The power level values are assigned to satisfy SrxlevCell 28 < 0 such that selecting Cell 1 is guaranteed. (NOTE 1).
NOTE 1: Power level “Off” is defined in TS36.508 Table 6.2.2.1-1.					

Table 8.2.4.14a.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup inter-band measurement on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 28 power level according to the row "T1" in table 8.2.4.14a.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP, RSRQ value for Cell 28.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to order the UE to perform inter-band handover to Cell 28.	<--	*RRCConnectionReconfiguration*	-	-
-	EXCEPTION: In parallel to the events described in step 6 the steps specified in Table 8.2.4.14a.3.2-3 should take place.	-	-	-	-
6	The SS changes Cell 1 power level according to the row "T2" in table 8.2.4.14a.3.2-1.	-	-	-	-
7	Check: Does the UE transmit an *RRCConnectionReestablishmentRequest* message on Cell 28?	-->	*RRCConnectionReestablishmentRequest*	1	P
8	The SS transmits an *RRCConnectionReestablishment* message to resume SRB1 operation and re-activate security on Cell 28.	<--	*RRCConnectionReestablishment*	-	-
9	Check: Does the UE transmit an *RRCConnectionReestablishmentComplete* message using the security key derived from the currently active K_{eNB} on Cell 28?	-->	*RRCConnectionReestablishmentComplete*	2	P
10	The SS transmits an *RRCConnectionReconfiguration* message to resume existing radio bearer on Cell 28.	<--	*RRCConnectionReconfiguration*	-	-
11	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 28.	-->	*RRCConnectionReconfigurationtComplete*	-	-
11A	The UE transmits a TRACKING AREA UPDATE REQUEST message on Cell 28.	-	-	-	-
11B	SS responds with a TRACKING AREA UPDATE ACCEPT message. NOTE: The TAU is accepted with PLMN1 listed as an Equivalent PLMN	-	-	-	-
11C	The UE transmits a TRACKING AREA UPDATE COMPLETE message.	-	-	-	-
12	The SS changes Cell 1 and Cell 28 power levels according to the row "T3" in table 8.2.4.14a.3.2-1.	-	-	-	-
13	The UE transmits a *MeasurementReport* message on Cell 28 to report event A3 with the measured RSRP, RSRQ value for Cell 1.	-->	*MeasurementReport*	-	-
14	The SS transmits an *RRCConnectionReconfiguration* message on Cell 28 to order the UE to perform inter-band handover to Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
-	EXCEPTION: In parallel to the events described in step 15 the steps specified in Table 8.2.4.14a.3.2-4 should take place.	-	-	-	-
15	The SS changes Cell 28 power level according to the row "T4" in table 8.2.4.14a.3.2-1.	-	-	-	-
16	Check: Does the UE transmit an *RRCConnectionReestablishmentRequest* message on Cell 1?	-->	*RRCConnectionReestablishmentRequest*	3	P

17	The SS transmits an *RRCConnectionReestablishment* message to resume SRB1 operation and re-activate security on Cell 1.	<--	*RRCConnectionReestablishment*	-	-
18	Check: Does the UE transmit an *RRCConnectionReestablishmentComplete* message using the security key derived from the *nextHopChainingCount* on Cell 1?	-->	*RRCConnectionReestablishment Complete*	4	P
19	The SS transmits an *RRCConnectionReconfiguration* message to resume existing radio bearer on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
20	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationtC omplete*	-	-
20A	The UE transmits a TRACKING AREA UPDATE REQUEST message on Cell 1.	-	-	-	-
20B	SS responds with a TRACKING AREA UPDATE ACCEPT message. NOTE: The TAU is accepted with PLMN2 listed as an Equivalent PLMN	-	-	-	-
20C	The UE transmits a TRACKING AREA UPDATE COMPLETE message.	-	-	-	-
21	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	-

Table 8.2.4.14a.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 28.	-	-	-	-
2	The SS does not respond.	-	-	-	-

Table 8.2.4.14a.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.	-	-	-	-

8.2.4.14a.3.3 Specific message contents

Table 8.2.4.14a.3.3-0: *SystemInformationBlockType2* for Cell 1 and Cell 28 (preamble and all the steps in Table 8.2.4.14a.3.2-2)

Derivation Path: 36.508, Table 4.6.3-12			
Information Element	**Value/remark**	**Comment**	**Condition**
ra-SupervisionInfo SEQUENCE {			
preambleTransMax	n50		
}			

Table 8.2.4.14a.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.14a.3.2-2)

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

Table 8.2.4.14a.3.3-2: *MeasConfig* (Table 8.2.4.14a.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-f6		
measObject[2]	MeasObjectEUTRA-GENERIC(f6)		
}			
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-f6		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

Table 8.2.4.14a.3.3-3: *MeasurementReport* (step 4, Table 8.2.4.14a.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 28		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.2.4.14a.3.3-4: *RRCConnectionReconfiguration* (step 5, Table 8.2.4.14a.3.2-2)

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

Table 8.2.4.14a.3.3-5: *MobilityControlInfo* (Table 8.2.4.14a.3.3-4)

Derivation Path: 36.308, 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		
}			
rach-ConfigDedicated SEQUENCE {			
ra-PreambleIndex	63		
ra-PRACH-MaskIndex	0		
}			
}			

Table 8.2.4.14a.3.3-6: *RRCConnectionReestablishmentRequest* (step 7, Table 8.2.4.14a.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 8.2.4.14a.3.3-7: *RRCConnectionReestablishment* (step 8, Table 8.2.4.14a.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 8.2.4.14a.3.3-7A: *RRCConnectionReestablishmentComplete* (step 9 and step 18, Table 8.2.4.14a.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 8.2.4.14a.3.3-8: *RRCConnectionReconfiguration* (step 10 and step 19, Table 8.2.4.14a.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 {			
radioResourceConfigDedicated	RadioResourceConfigDedicated-HO		
}			
}			
}			
}			

Table 8.2.4.14a.3.3-9: *MeasConfig* (Table 8.2.4.14a.3.3-8)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ

Table 8.2.4.14a.3.3-10: *MeasurementReport* (step 13, Table 8.2.4.14a.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 28	
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 8.2.4.14a.3.3-11: *RRCConnectionReconfiguration* (step 14, Table 8.2.4.14a.3.2-2)

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

Table 8.2.4.14a.3.3-12: *MobilityControlInfo* (Table 8.2.4.14a.3.3-10)

Derivation Path: 36.308, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 1		
carrierFreq SEQUENCE {			
dl-CarrierFreq	Same downlink EARFCN as used for Cell 1		
ul-CarrierFreq	Not present		
}			
rach-ConfigDedicated SEQUENCE {			
ra-PreambleIndex	63		
ra-PRACH-MaskIndex	0		
}			
}			

Table 8.2.4.14a.3.3-13: *RRCConnectionReestablishmentRequest* (step 16, Table 8.2.4.14a.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 28		
shortMAC-I	The same value as the 16 least significant bits of the XMAC-I value calculated by SS.		
}			
reestablishmentCause	handoverFailure		
}			
}			
}			

Table 8.2.4.14a.3.3-14: *RRCConnectionReestablishment* (step 17, Table 8.2.4.14a.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	2		
}			
}			
}			
}			

Table 8.2.4.14a.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		

Table 8.2.4.14a.3.3-16: TRACKING AREA UPDATE ACCEPT for Cell 28 (step 11B, Table 8.2.4.14a.3.2-2)

Derivation path: 36.508 Table 4.7.2-24			
Information Element	**Value/Remark**	**Comment**	**Condition**
Equivalent PLMNs	PLMN1		

Table 8.2.4.14a.3.3-17: TRACKING AREA UPDATE ACCEPT for Cell 1 (step 20B, Table 8.2.4.14a.3.2-2)

Derivation path: 36.508 Table 4.7.2-24			
Information Element	**Value/Remark**	**Comment**	**Condition**
Equivalent PLMNs	PLMN2		

8.2.4.15 RRC connection reconfiguration / Handover / Failure / Re-establishment failure / Inter-band

8.2.4.15.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment and initial security activation procedure
and after receiving an RRCConnectionReconfiguration message including an IE
mobilityControlInformation indicating a different E-UTRA cell having attempted inter-band handover }
ensure that {
  when { UE detects handover failure and fails an RRC connection re-establishment procedure }
    then { UE enters the E-UTRA RRC_IDLE state and trigger TAU procedure in order to recover RRC
connection }
            }
```

8.2.4.15.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331 clauses 5.3.5.4, 5.3.5.6, 5.3.7.2, 5.3.7.3, 5.3.7.4, 5.3.7.7 and 5.3.12

[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> 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> 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;

NOTE 4: 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 5: 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 handover failure, in accordance with 5.3.5.6; or

...

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 5.3.7.3]

Upon selecting a suitable E-UTRA cell, the UE shall:

1> stop timer T311;

1> start timer T301;

1> apply the *timeAlignmentTimerCommon* included in *SystemInformationBlockType2*;

1> initiate transmission of the *RRCConnectionReestablishmentRequest* message in accordance with 5.3.7.4;

NOTE 6: This procedure applies also if the UE returns to the source cell.

[TS 36.331, clause 5.3.7.4]

The UE shall set the contents of *RRCConnectionReestablishmentRequest* message as follows:

1> set the *ue-Identity* as follows:

2> set the *c-RNTI* to the C-RNTI used in the source cell (handover and mobility from E-UTRA failure) or used in the cell in which the trigger for the re-establishment occurred (other cases);

2> set the *physCellId* to the physical cell identity of the source cell (handover and mobility from E-UTRA failure) or of the cell in which the trigger for the re-establishment occurred (other cases);

2> set the *shortMAC-I* to the 16 least significant bits of the MAC-I calculated:

3> over the ASN.1 encoded as per section 8 (i.e., a multiple of 8 bits) *VarShortMAC-Input*;

3> with the K_{RRCint} key and integrity protection algorithm that was used in the source cell (handover and mobility from E-UTRA failure) or of the cell in which the trigger for the re-establishment occurred (other cases); and

3> with all input bits for COUNT, BEARER and DIRECTION set to binary ones;

1> set the *reestablishmentCause* as follows:

2> if the re-establishment procedure was initiated due to reconfiguration failure as specified in 5.3.5.5 (the UE is unable to comply with the reconfiguration):

3> set the *reestablishmentCause* to the value '*reconfigurationFailure*';

2> else if the re-establishment procedure was initiated due to handover failure as specified in 5.3.5.6 (intra-LTE handover failure) or 5.4.3.5 (inter-RAT mobility from EUTRA failure):

3> set the *reestablishmentCause* to the value '*handoverFailure*';

2> else:

3> set the *reestablishmentCause* to the value '*otherFailure*';

The UE shall submit the *RRCConnectionReestablishmentRequest* message to lower layers for transmission.

[TS 36.331, clause 5.3.7.6]

Upon T311 expiry, the UE shall:

1> perform the actions upon leaving RRC_CONNECTED as specified in 5.3.12, with release cause 'RRC connection failure';

[TS 36.331, clause 5.3.12]

Upon leaving RRC_CONNECTED, the UE shall:

1> reset MAC;

1> stop all timers that are running except T320;

1> release all radio resources, including release of the RLC entity, the MAC configuration and the associated PDCP entity for all established RBs;

1> indicate the release of the RRC connection to upper layers together with the release cause;

1> if leaving RRC_CONNECTED was not triggered by reception of the *MobilityFromEUTRACommand* message:

2> enter RRC_IDLE and perform procedures as specified in TS 36.304 [4, 5.2.7];

8.2.4.15.3 Test description

8.2.4.15.3.1 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].

8.2.4.15.3.2 Test procedure sequence

Table 8.2.4.15.3.2-1 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, 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 8.2.4.15.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 10	Remark
T0	Cell-specific RS EPRE	dBm/15 kHz	-85	-97	The power level values are such that measurement results for Cell 1 (M1) and Cell 10 (M10) satisfy exit condition for event A3 (M1 > M10)
T1	Cell-specific RS EPRE	dBm/15 kHz	-85	-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)
T2	Cell-specific RS EPRE	dBm/15 kHz	-85	"Off"	The power level values are such that $Srxlev_{Cell\ 1}$ > $Srxlev_{Cell\ 10}$ and $Srxlev_{Cell\ 10}$ <0. (NOTE 1)
NOTE 1: Power level “Off” is defined in TS36.508 Table 6.2.2.1-1.					

Table 8.2.4.15.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup inter-band measurement on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 1 and Cell 10 parameters according to the row "T1" in table 8.2.4.15.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP and RSRQ value for Cell 10.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to order the UE to perform inter-band handover to Cell 10.	<--	*RRCConnectionReconfiguration*	-	-
-	EXCEPTION: In parallel to the events described in step 6 the steps specified in Table 8.2.4.15.3.2-3 should take place.	-	-	-	-
6	The SS changes Cell 1 and Cell 10 parameters according to the row "T2" in table 8.2.4.15.3.2-1.	-	-	-	-
7	The UE transmits an *RRCConnectionReestablishmentRequest* message on Cell 1.	-->	*RRCConnectionReestablishmentRequest*	-	-
8	The SS does not respond to any *RRCConnectionReestablishmentRequest* message and waits for 1s to ensure that T301 expires and the UE goes to RRC_IDLE state on Cell 1.	-	-	-	-
9-13	The UE will perform TAU procedure based on steps 1 to 5 of subclause 6.4.2.7 in TS 36.508 on Cell 1. NOTE: The UE performs a TAU procedure due to NAS signalling connection recovery.	-	-	-	-
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	-
-	At the end of this test procedure sequence, the UE is in end state E-UTRA connected (E2_T3440) according to TS 36.508.	-	-	-	-

Table 8.2.4.15.3.2-3: 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.	-	-	-	-

8.2.4.15.3.3 Specific message contents

Table 8.2.4.15.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.15.3.2-2)

Derivation Path: 36.508 Table 4.6.1-8, condition MEAS

Table 8.2.4.15.3.3-2: *MeasConfig* (Table 8.2.4.15.3.3-1)

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]	ReportConfig-A3		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f5		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

Table 8.2.4.15.3.3-3: *MeasurementReport* (step 4, Table 8.2.4.15.3.2-2)

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 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 8.2.4.15.3.3-4: *RRCConnectionReconfiguration* (step 5, Table 8.2.4.15.3.2-2)

Derivation path: 36.508 Table 4.6.1-8, condition HO

Table 8.2.4.15.3.3-5: *MobilityControlInfo* (Table 8.2.4.15.3.3-4)

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 8.2.4.15.3.3-6: *RRCConnectionReestablishmentRequest* (step 7, Table 8.2.4.15.3.2-2)

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		
}			
}			
}			

8.2.4.15a RRC connection reconfiguration / Handover / Failure / Re-establishment failure / Inter-band / Between FDD and TDD

8.2.4.15a.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA FDD RRC_CONNECTED state and having completed the radio bearer establishment and
initial security activation procedure on E-UTRA FDD cell and after receiving an
RRCConnectionReconfiguration message including an IE mobilityControlInfo indicating a different E-
UTRA TDD cell having attempted inter-mode handover }
ensure that {
  when { UE detects handover failure and fails an RRC connection re-establishment procedure }
    then { UE enters the E-UTRA FDD RRC_IDLE state and trigger TAU procedure in order to recover RRC
connection on E-UTRA FDD cell }
}
```

(2)

```
with { UE in E-UTRA TDD RRC_CONNECTED state and having completed the radio bearer establishment and
initial security activation procedure on E-UTRA TDD cell and after receiving an
RRCConnectionReconfiguration message including an IE mobilityControlInfo indicating a different E-
UTRA FDD cell having attempted inter-mode handover }
```

```
ensure that {
  when { UE detects handover failure and fails an RRC connection re-establishment procedure }
    then { UE enters the E-UTRA TDD RRC_IDLE state and trigger TAU procedure in order to recover RRC
connection on E-UTRA TDD cell }
}
```

8.2.4.15a.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: 3GPP TS 36.331 clauses 5.3.5.4, 5.3.5.6, 5.3.7.2, 5.3.7.3, 5.3.7.4, 5.3.7.7 and 5.3.12.

[TS 36.331, clause 5.3.5.4]

...

If the *RRCConnectionReconfiguration* message includes the *mobilityControlInformation* 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 *mobilityControlInformation*;

1> request PDCP to initiate the PDCP Re-establishment procedure for all RBs that are established;

NOTE 2: The handling of the radio bearers after the successful completion of the L2 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 [8].

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

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

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

1> set the C-RNTI to the value of the *newUE-Identity*;

1> if the *eutra-CarrierFreq* is included:

2> consider the target cell to be one on the frequency indicated by the *eutra-CarrierFreq* with a physical cell identity indicated by the *targetCellIdentity*;

1> else:

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

1> if the *dl-Bandwidth* is included:

2> for the target cell, apply the downlink bandwidth indicated by the *dl-Bandwidth*;

1> else:

2> for the target cell, apply the same downlink bandwidth as for the current cell;

1> if the *ul-Bandwidth* is included:

2> for the target cell, apply the uplink bandwidth indicated by the *ul-Bandwidth*;

1> else:

2> for the target cell, apply the same uplink bandwidth as for the current cell;

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

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

2> apply the AS-derived keys associated with the AS-base key indicated by the *keyIndicator*;

2> configure lower layers to apply the indicated integrity protection algorithm, i.e. the indicated integrity protection configuration shall be applied to all subsequent messages received and sent by the UE in the target cell, including the message used to indicate the successful completion of the procedure;

2> configure lower layers to apply the indicated ciphering algorithm, i.e. the indicated ciphering configuration shall be applied to all subsequent messages received and sent by the UE in the target cell, including the message used to indicate the successful completion of the procedure;

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

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

1> synchronise to the DL of the target cell;

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

1> If MAC successfully completes the random access procedure:

2> stop timer T304;

2> If the *physicalConfigDedicated* is included in the *RRCConnectionReconfiguration* message:

3> If the UE needs the SFN of the target cell to apply the PUCCH and Sounding RS configuration:

4> apply the new PUCCH and Sounding RS configuration upon acquiring the SFN of the target cell;

3> else:

4> apply the new PUCCH and Sounding RS configuration;

2> indicate to PDCP to complete the PDCP Re-establishment procedure for all DRBs that are established, if any;

2> the procedure ends.

...

[TS 36.331, clause 5.3.5.6]

The UE shall:

1> If T304 expires (handover failure):

NOTE 1: Following T304 expiry dedicated preambles, if provided within the *rach-ConfigDedicated*, are not available for use by the UE anymore.

2> revert back to the configuration used in the source cell, excluding the physical layer configuration;

NOTE 2: The UE reverts to the RRC configuration as well as the layer 2 configuration (PDCP/RLC/MAC) used in the source cell.

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 security has been activated. The UE initiates the procedure when one of the following conditions is met:

...

1> upon handover failure, in accordance with 5.3.5.6; or

...

Upon initiation of the procedure, the UE shall:

...

1> start timer T311;

1> request PDCP to initiate the PDCP Re-establishment procedure for all RBs that are established;

NOTE 1: The handling of the radio bearers after the successful completion of the L2 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 [8].

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

1> select a suitable cell in accordance with the cell selection process as specified in [4];

[TS 36.331, clause 5.3.7.3]

...

2> initiate transmission of the *RRCConnectionReestablishmentRequest* message in accordance with 5.3.7.4;

...

[TS 36.331, clause 5.3.7.4]

The UE shall set the contents of *RRCConnectionReestablishmentRequest* message as follows:

1> set the IE *ue-Identity* as follows:

2> set the *c-RNTI* to the C-RNTI used in the source cell (handover failure case) or used in the cell in which the trigger for the re-establishment occurred (other cases);

2> set the *cellIdentity* to the Physical layer identity of the source cell (handover failure case) or of the cell in which the trigger for the re-establishment occurred (other cases);

2> set the *shortMAC-I* to the 16 least significant bits of the MAC-I calculated:

3> over the concatenation of the ASN.1 encoded *CellIdentity* of the current cell, *PhysicalCellIdentity* of the cell the UE was connected to prior to the failure and C-RNTI that the UE had in the cell it was connected to prior to the failure;

3> with the integrity protection key and integrity protection algorithm that was used in the cell the UE was connected to prior to the failure; and

3> with all input bits for COUNT, BEARER and DIRECTION set to binary ones.

1> set the IE *reestablishmentCause* as follows:

...

2> else if the re-establishment procedure was initiated due to handover failure as specified in 5.3.5.6 (intra-LTE handover failure) or 5.4.3.5 (inter-RAT mobility from EUTRA failure):

3> set the *reestablishmentCause* to the value '*handoverFailure*';

...

The UE shall submit the *RRCConnectionReestablishmentRequest* message to lower layers for transmission.

[TS 36.331, clause 5.3.7.7]

Upon T311 expiry, the UE shall:

1> perform the actions upon moving from RRC_CONNECTED to RRC_IDLE as specified in 5.3.12.

...

[TS 36.331, clause 5.3.12]

Upon moving from RRC_CONNECTED to RRC_IDLE, the UE shall:

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

...

1> stop all timers that are running except T320;

1> release all radio resources, including release of the RLC entity and the associated PDCP entity for all established RBs;

1> indicate the release of the RRC connection to upper layers;

1> enter RRC_IDLE.

8.2.4.15a.3 Test description

8.2.4.15a.3.1 Pre-test conditions

System Simulator:

- Cell 1 is an LTE FDD cell, Cell 10 and Cell 30 are LTE TDD cells.
- Each cell has only a single PLMN identity. The PLMNs are identified in the test by the identifiers in Table 8.2.4.15 a.3.1-1.

Table 8.2.4.15 a.3.1-1: PLMN identifiers

Cell	PLMN name
1	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 8.2.4.15a.3.3-13.
- The UE is in state Generic RB Established (state 3) on Cell 1 according to [18].

8.2.4.15a.3.2 Test procedure sequence

Table 8.2.4.15a.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, while columns 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 8.2.4.15a.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 10	Cell 30	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	-97	“Off”	The power level values are such that measurement results for Cell 1 (M1) and Cell 10 (M10) satisfy exit condition for event A3 (M10 < M1).
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-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).
T2	Cell-specific RS EPRE	dBm/15kHz	-85	"Off"	“Off”	The power level values are assigned to satisfy SrxlevCell 10 < 0 such that selecting Cell 1 is guaranteed (NOTE 1).
T3	Cell-specific RS EPRE	dBm/15kHz	-85	"Off"	-73	The power level values are such that measurement results for Cell 1 (M1) and Cell 30 (M30) satisfy entry condition for event A3 (M30> M1). (NOTE 1).
T4	Cell-specific RS EPRE	dBm/15kHz	-73	"Off"	-85	The power level values are such that measurement results for Cell 30 (M30) satisfy entry condition for event A3 (M1> M30). (NOTE 1).
T5	Cell-specific RS EPRE	dBm/15kHz	"Off"	"Off"	-85	The power level values are assigned to satisfy SrxlevCell 1 < 0 such that selecting Cell 30 is guaranteed (NOTE 1).
NOTE 1: Power level “Off” is defined in TS36.508 Table 6.2.2.1-1.						

Table 8.2.4.15a.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message to setup inter-band measurement on Cell 1 for Cell 10.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 10 parameters according to the row "T1" in table 8.2.4.15a.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP and RSRQ value for Cell 10.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to order the UE to perform inter-band handover to Cell 10.	<--	*RRCConnectionReconfiguration*	-	-
-	EXCEPTION: In parallel to the events described in step 6 the steps specified in Table 8.2.4.15a.3.2-3 should take place.	-	-	-	-
6	The SS changes Cell 10 parameters according to the row "T2" in table 8.2.4.15a.3.2-1.	-	-	-	-
7	The UE transmits an *RRCConnectionReestablishmentRequest* message on Cell 1.	-->	*RRCConnectionReestablishmentRequest*	-	-
8	The SS does not respond to any *RRCConnectionReestablishmentRequest* message and waits for 1s to ensure that T301 expires and the UE goes to RRC_IDLE state on Cell 1.	-	-	-	-
9	Generic test procedure described in TS 36.508 subclause 6.4.2.7 is performed on Cell 1 . NOTE: The UE performs a TAU procedure due to NAS signalling connection recovery. NOTE: The TAU is accepted with PLMN2 listed as an Equivalent PLMN	-	-	-	-
10	Generic test procedure described in TS 36.508 subclause 4.5.3.3.is executed	-	-	1	-
11	The SS transmits an *RRCConnectionReconfiguration* message to setup inter-band measurement on Cell 1 for Cell 30.	<--	*RRCConnectionReconfiguration*	-	-
12	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
13	The SS changes Cell 30 parameters according to the row "T3" in table 8.2.4.15a.3.2-1.	-	-	-	-
14	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP and RSRQ value for Cell 30.	-->	*MeasurementReport*	-	-
15	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to order the UE to perform inter-band handover to Cell 30.	<--	*RRCConnectionReconfiguration*	-	-
16	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 30 to confirm the successful handover	-->	*RRCConnectionReconfigurationComplete*	-	-
17	The UE transmits a TRACKING AREA UPDATE REQUEST message on Cell 30.	-	-	-	-
18	SS responds with a TRACKING AREA UPDATE ACCEPT message. NOTE: The TAU is accepted with PLMN1 listed as an Equivalent PLMN	-	-	-	-

19	The UE transmits a TRACKING AREA UPDATE COMPLETE message.	-	-	-	-
20	The SS changes Cell 1 and Cell 30 parameters according to the row "T4" in table 8.2.4.15a.3.2-1.	-	-	-	-
21	The UE transmits a *MeasurementReport* message on Cell 30 to report event A3 with the measured RSRP and RSRQ value for Cell 1.	-->	*MeasurementReport*	-	-
22	The SS transmits an *RRCConnectionReconfiguration* message on Cell 30 to order the UE to perform inter-band handover to Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
-	EXCEPTION: In parallel to the events described in step 26 the steps specified in Table 8.2.4.15a.3.2-4 should take place.	-	-	-	-
23	The SS changes Cell 1 parameters according to the row "T5" in table 8.2.4.15a.3.2-1.	-	-	-	-
24	The UE transmits an *RRCConnectionReestablishmentRequest* message on Cell 30.	-->	*RRCConnectionReestablishment Request*	-	-
25	The SS does not respond to any *RRCConnectionReestablishmentRequest* message and waits for 1s to ensure that T301 expires and the UE goes to RRC_IDLE state on Cell 30.	-	-	-	-
26-30	The UE will perform TAU procedure based on steps 1 to 5 of subclause 6.4.2.7 in TS 36.508 on Cell 30. NOTE: The UE performs a TAU procedure due to NAS signalling connection recovery or TAI change. NOTE: The TAU is accepted with PLMN1 listed as an Equivalent PLMN	-	-	-	-
31	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 30?	-	-	2	-
-	At the end of this test procedure sequence, the UE is in end state E-UTRA connected (E2_T3440) according to TS 36.508.	-	-	-	-

Table 8.2.4.15a.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 8.2.4.15a.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.	-	-	-	-

8.2.4.15a.3.3 Specific message contents

Table 8.2.4.15a.3.3-1: *RRCConnectionReconfiguration* (step 1 and step 11, Table 8.2.4.15a.3.2-2)

Derivation path: 36.508 Table 4.6.1-8, condition MEAS

Table 8.2.4.15a.3.3-2: *MeasConfig* (step 1 and step 11, Table 8.2.4.15a.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 {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f5		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

Table 8.2.4.15a.3.3-3: *MeasurementReport* (step 4, Table 8.2.4.15a.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 10		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.2.4.15a.3.3-4: *RRCConnectionReconfiguration* (step 5 and step 22, Table 8.2.4.15a.3.2-2)

Derivation path: 36.508 Table 4.6.1-8, condition HO

Table 8.2.4.15a.3.3-4A: *RRCConnectionReconfiguration* (step 15, Table 8.2.4.15a.3.2-2)

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

Table 8.2.4.15a.3.3-4B: *MeasConfig* (step 15 Table 8.2.4.15a.3.3-4A)

Derivation Path: 36.508, Table 4.6.6-1, condition INTER-FREQ

Table 8.2.4.15a.3.3-5: *MobilityControlInfo* (step 5, Table 8.2.4.15a.3.3-4)

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 8.2.4.15a.3.3-6: *RRCConnectionReestablishmentRequest* (step 7, Table 8.2.4.15a.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 8.2.4.15a.3.3-7: *MeasurementReport* (step 14, Table 8.2.4.15a.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 30		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
}			
}			
}			
}			
}			
}			
}			

Table 8.2.4.15a.3.3-8: *MobilityControlInfo* (step 15, Table 8.2.4.15a.3.3-4A)

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 8.2.4.15a.3.3-9: *MeasurementReport* (step 21, Table 8.2.4.15a.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 30	
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 8.2.4.15a.3.3-10: *MobilityControlInfo* (step 22, Table 8.2.4.15a.3.3-4)

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 downlink EARFCN as used for Cell 1		
ul-CarrierFreq	Not present		
}			
}			

Table 8.2.4.15a.3.3-11: *RRCConnectionReestablishmentRequest* (step 24, Table 8.2.4.15a.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 30		
shortMAC-I	The same value as the 16 least significant bits of the XMAC-I value calculated by SS		
}			
reestablishmentCause	handoverFailure		
}			
}			
}			

Table 8.2.4.15a.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		

Table 8.2.4.15a.3.3-13: TRACKING AREA UPDATE ACCEPT for Cell 1 (steps 9, Table 8.2.4.15a.3.2-2)

Derivation path: 36.508 Table 4.7.2-24			
Information Element	**Value/Remark**	**Comment**	**Condition**
Equivalent PLMNs	PLMN2		

Table 8.2.4.15a.3.3-14: TRACKING AREA UPDATE ACCEPT for Cell 30 (step 18, Table 8.2.4.15a.3.2-2)

Derivation path: 36.508 Table 4.7.2-24			
Information Element	**Value/Remark**	**Comment**	**Condition**
Equivalent PLMNs	PLMN1		

Table 8.2.4.15a.3.3-15: TRACKING AREA UPDATE ACCEPT for Cell 30 (steps 26-30, Table 8.2.4.15a.3.2-2)

Derivation path: 36.508 Table 4.7.2-24			
Information Element	**Value/Remark**	**Comment**	**Condition**
Equivalent PLMNs	PLMN1		

8.2.4.16 CA / RRC connection reconfiguration / Setup and Change of MIMO

8.2.4.16.1 CA / RRC connection reconfiguration / Setup and Change of MIMO / Intra-band Contiguous CA

8.2.4.16.1.1 Test Purpose (TP)

(1)

with { UE having completed the radio bearer establishment and initial security activation procedure and configured an Scell }

```
ensure that {
  when { UE receives an RRCConnectionReconfiguration message indicating PCell and Scell TM
modification}
    then { UE sends an RRCConnectionReconfigurationComplete message and changes transmission mode of
the Pcell and SCell}
           }
```

8.2.4.16.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.10.6.

[TS 36.331, clause 5.3.10.6]

The UE shall:

1> if the *antennaInfo-r10* is included in the received *physicalConfigDedicated* and the previous version of this field that was received by the UE was *antennaInfo* (without suffix i.e. the version defined in REL-8):

2> apply the default antenna configuration as specified in section 9.2.4;

1> if the *cqi-ReportConfig-r10* is included in the received *physicalConfigDedicated* and the previous version of this field that was received by the UE was *cqi-ReportConfig* (without suffix i.e. the version defined in REL-8):

2> apply the default CQI reporting configuration as specified in 9.2.4;

NOTE: Application of the default configuration involves release of all extensions introduced in REL-9 and later.

1> reconfigure the physical channel configuration in accordance with the received *physicalConfigDedicated*;

1> if the *antennaInfo* is included and set to *explicitValue*:

2> if the configured *transmissionMode* is not *tm3* or *tm4* or *tm8* or *tm9*; or

2> if the configured *transmissionMode* is *tm8* and *pmi-RI-Report* is not present; or

2> if the configured *transmissionMode* is *tm9* and *pmi-RI-Report* is not present; or

2> if the configured *transmissionMode* is *tm9* and *pmi-RI-Report* is present and *antennaPortsCount* within *csi-RS* is set to *an1*:

3> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

1> else if the *antennaInfo* is included and set to *defaultValue*:

2> release *ri-ConfigIndex* in *cqi-ReportPeriodic*, if previously configured;

8.2.4.16.1.3 Test description

8.2.4.16.1.3.1 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 in TM2 according to [18].

8.2.4.16.1.3.2 Test procedure sequence

Table 8.2.4.16.1.3.2-1 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. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.2.4.16.1.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 3
T0	Cell-specific RS EPRE	dBm/15kHz	-85	-107
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-91

Table 8.2.4.16.1.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS changes Cell 1 and Cell 3 parameters according to the row "T1" in table 8.2.4.16.3.2-1.				
2	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to reconfigure Cell 3 as a Scell and reconfiguring transmission mode for both PCell and SCell.	<--	*RRCConnectionReconfiguration*	1	P
3	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
4	The SS transmits an *RRCConnectionReconfiguration* message to reconfigure transmission mode on both PCell and SCell.	<--	*RRCConnectionReconfiguration*	-	-
5	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	1	P

8.2.4.16.1.3.3 Specific message contents

Table 8.2.4.16.1.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.16.1.3.2-2)

Derivation Path: 36.508 Table 4.6.1-8, condition SCell_AddMod			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
rrc-TransactionIdentifier	RRC-TransactionIdentifier-DL		
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
RadioResourceConfigCommon-DEFAULT ::= SEQUENCE {			
PhysicalConfigDedicated ::= SEQUENCE {			
antennaInfo-r10	TM3		
}			
}			
}			
}			
}			
}			

Table 8.2.4.16.1.3.3-2: *SCellToAddMod-r10* (Table 8.2.4.16.1.3.3-1)

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	DEFAULT EARFCN		
}			
}			

Table 8.2.4.16.1.3.3-3: *RadioResourceConfiDedicatedSCell-r10* (Table 8.2.4.16.1.3.3-1)

Derivation Path: 36.508, Table 4.6.3-19AA			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicatedSCell-r10 ::= SEQUENCE {			
PhysicalConfigDedicatedSCell-r10 ::= SEQUENCE {			
nonUL-Configuration-r10 SEQUENCE {			
antennaInfo-r10 {			
transmissionMode-r10	TM2		
}			
}			
}			
}			

Table 8.2.4.16.1.3.3-4: *RRCConnectionReconfiguration* (step 3, Table 8.2.4.16.1.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition SCell_AddMod			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
RadioResourceConfigCommon-DEFAULT ::= SEQUENCE {			
PhysicalConfigDedicated ::= SEQUENCE {			
antennaInfo-r10	TM2		
}			
}			
}			
}			
}			
}			

Table 8.2.4.16.1.3.3-5: *SCellToAddMod-r10* (Table 8.2.4.16.1.3.3-5)

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	DEFAULT EARFCN		
}			
}			

Table 8.2.4.16.1.3.3-6: *RadioResourceConfiDedicatedSCell-r10* (Table 8.2.4.16.1.3.3-5)

Derivation Path: 36.508, Table 4.6.3-19AA			
Information Element	**Value/remark**	**Comment**	**Condition**
RadioResourceConfigDedicatedSCell-r10 ::= SEQUENCE {			
PhysicalConfigDedicatedSCell-r10 ::= SEQUENCE {			
nonUL-Configuration-r10 SEQUENCE {			
antennaInfo-r10 {			
transmissionMode-r10	TM3		
}			
}			
}			
}			

8.2.4.16.2 CA / RRC connection reconfiguration / Setup and Change of MIMO / Inter-band CA

The scope and description of the present TC is the same as test case 8.2.4.16.1 with the following differences:

- CA configuration: Inter-band CA replaces Intra-band Contiguous CA.
- Cells configuration: Cell 10 replaces Cell 3.

8.2.4.17 CA / RRC connection reconfiguration / Handover / Success / PCell Change and SCell addition

8.2.4.17.1 CA / RRC connection reconfiguration / Handover / Success / PCell Change and SCell addition / Intra-band Contiguous CA

8.2.4.17.1.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment and initial security activation procedure
and performed the inter frequency measurement }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo
indicating a different E-UTRA frequency to be handover to one of the SCell and sCellToAddModList
with an SCell addition }
    then { UE transmits an RRCConnectionReconfigurationComplete message }
          }
```

8.2.4.17.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.5.4

[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 PCell 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 PCell to be one on the frequency of the source PCell with a physical cell identity indicated by the *targetPhysCellId*;

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

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> configure lower layers to consider the SCell(s), if configured, to be in deactivated state;

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> 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> if connected as an RN:

3> derive the K_{UPint} 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> if connected as an RN:

3> derive the K_{UPint} 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> if connected as an RN:

2> configure lower layers to apply the integrity protection algorithm and the K_{UPint} key, for current or subsequently established DRBs that are configured to apply integrity protection, if any;

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 s*CellToAddModList*:

2> perform SCell addition or modification as specified in 5.3.10.3b;

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> perform the measurement identity autonomous removal as specified in 5.5.2.2a;

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> set the content of *RRCConnectionReconfigurationComplete* message as follows:

2> if the UE has radio link failure or handover failure information available in *VarRLF-Report* and *plmn-Identity* stored in *VarRLF-Report* is equal to the RPLMN:

3> include *rlf-InfoAvailable*;

2> if the UE has logged measurements available for E-UTRA and *plmn-Identity* stored in *VarLogMeasReport* is equal to the RPLMN:

3> include the *logMeasAvailable*;

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 PCell, 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 PCell (e.g. measurement gaps, periodic CQI reporting, scheduling request configuration, sounding RS configuration), if any, upon acquiring the SFN of the target PCell;

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;

NOTE 4: The UE is not required to determine the SFN of the target PCell by acquiring system information from that cell before performing RACH access in the target PCell.

8.2.4.17.1.3 Test description

8.2.4.17.1.3.1 Pre-test conditions

System Simulator:

- Cell 1 is the PCell and Cell 3 SCell
- 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].

8.2.4.17.1.3.2 Test procedure sequence

Table 8.2.4.17.1.3.2-1 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" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.2.4.17.1.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 3	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	Off	The power level values are such that camping on Cell 1 is guarantee.
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-79	Power levels are such that entry condition for event A3 (measId 1) is satisfied: $Mn + Ofn + Ocn - Hys > Ms + Ofs + Ocs + C$

Table 8.2.4.17.1.3.2-2: 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 on Cell 1 to setup event A3 reporting configuration.	<--	*RRCConnectionReconfiguration*	-	-
4	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
5	The SS changes Cell 3 parameters according to the row "T1" in table 8.2.4.17.1.3.2-1.	-	-	-	-
6	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP, RSRQ value for Cell 3.	-->	*MeasurementReport*	-	-
7	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to order the UE to perform handover to Cell 3 with Cell 1 as SCell addition at the same time.	<--	*RRCConnectionReconfiguration*	-	-
8	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 3 to confirm the successful completion of the handover and SCell addition of Cell 1?	-->	*RRCConnectionReconfigurationComplete*	1	P
9	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicates that the UE is in E-UTRA RRC_CONNECTED state on Cell 3?	-	-	1	-

8.2.4.17.1.3.3 Specific message contents

Table 8.2.4.17.1.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.17.1.3.2-2)

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 8.2.4.17.1.3.3-2: SCellToAddMod-r10-f2 (Table 8.2.4.17.1.3.3-1)

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]	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		
}			

Table 8.2.4.17.1.3.3-3: *RadioResourceConfigCommonSCell-r10-f2* (Table 8.2.4.17.1.3.3-2)

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 8.2.4.17.1.3.3-4: *Void*

Table 8.2.4.17.1.3.3-5: *RRCConnectionReconfiguration* (step 3, Table 8.2.4.17.1.3.2-2)

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

Table 8.2.4.17.1.3.3-6: *MeasConfig* (Table 8.2.4.17.1.3.3-5)

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)	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-A3		
reportConfig[1]	ReportConfigEUTRA-A3		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f2		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

Table 8.2.4.17.1.3.3-7: *MeasurementReport* (step 6, Table 8.2.4.17.1.3.2-2)

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		
measResultPCell ::= SEQUENCE {		Report Cell 1	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA ::= SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	physicalCellId of Cell 3		
cgi-Info[1]	Not present		
measResult[1] 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 8.2.4.17.1.3.3-8: *RRCConnectionReconfiguration* (step 7, Table 8.2.4.17.1.3.2-2)

Derivation Path: 36.508 Table 4.6.1-8 condition HO			
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 {			
SCellIndex-r10[1]	1		
}			
sCellToAddModList-r10	SCellToAddMod-r10-f1	SCell addition for Cell 1	
nonCriticalExtension SEQUENCE {}	Not present		
}			
}			
}			
}			
}			
}			
}			

Table 8.2.4.17.1.3.3-9: *MobilityControlInfo* (Table 8.2.4.17.1.3.3-8)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 3		
carrierFreq SEQUENCE {			
dl-CarrierFreq	Same downlink EARFCN as used for Cell 3		
ul-CarrierFreq	Not present		
}			
}			

Table 8.2.4.17.1.3.3-10: SCellToAddMod-r10-f1 (Table 8.2.4.17.1.3.3-8)

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 1		
dl-CarrierFreq-r10[1]	Same downlink EARFCN as used for Cell 1		
}			
radioResourceConfigCommonSCell-r10[1]	RadioResourceConfigCommonSCell-r10-f1		
}			

Table 8.2.4.17.1.3.3-11: *RadioResourceConfigCommonSCell-r10-f3* (Table 8.2.4.17.1.3.3-10)

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 1		
}			
}			

8.2.4.17.2 CA / RRC connection reconfiguration / Handover / Success / PCell Change and SCell addition / Inter-band CA

The scope and description of the present TC is the same as test case 8.2.4.17.1 with the following differences:

- CA configuration: Inter-band CA replaces Intra-band Contiguous CA
- Cells configuration: Cell 10 replaces Cell 3

8.2.4.18 CA / RRC connection reconfiguration / Handover / Success / SCell release

8.2.4.18.1 CA / RRC connection reconfiguration / Handover / Success / SCell release / Intra-band Contiguous CA

8.2.4.18.1.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment and initial security activation procedure,
performed the intra-frequency measurement and configured an SCell }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo and
including sCellToReleaseList with an sCellIndex set to the configured SCell }
    then { UE sends an RRCConnectionReconfigurationComplete message }
           }
```

8.2.4.18.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.5.4 and 5.3.10.3a.

[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 PCell 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 PCell to be one on the frequency of the source PCell with a physical cell identity indicated by the *targetPhysCellId*;

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

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> configure lower layers to consider the SCell(s), if configured, to be in deactivated state;

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> 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> if connected as an RN:

3> derive the K_{UPint} 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> if connected as an RN:

3> derive the K_{UPint} 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> if connected as an RN:

2> configure lower layers to apply the integrity protection algorithm and the K_{UPint} key, for current or subsequently established DRBs that are configured to apply integrity protection, if any;

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 s*CellToAddModList*:

2> perform SCell addition or modification as specified in 5.3.10.3b;

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> perform the measurement identity autonomous removal as specified in 5.5.2.2a;

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> set the content of *RRCConnectionReconfigurationComplete* message as follows:

2> if the UE has radio link failure or handover failure information available in *VarRLF-Report* and *plmn-Identity* stored in *VarRLF-Report* is equal to the RPLMN:

3> include *rlf-InfoAvailable*;

2> if the UE has logged measurements available for E-UTRA and *plmn-Identity* stored in *VarLogMeasReport* is equal to the RPLMN:

3> include the *logMeasAvailable*;

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 PCell, 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 PCell (e.g. measurement gaps, periodic CQI reporting, scheduling request configuration, sounding RS configuration), if any, upon acquiring the SFN of the target PCell;

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;

NOTE 4: The UE is not required to determine the SFN of the target PCell by acquiring system information from that cell before performing RACH access in the target PCell.

[TS 36.331, clause 5.3.10.3a]

The UE shall:

1> if the release is triggered by reception of the *sCellToReleaseList*:

2> for each *sCellIndex* value included in the *sCellToReleaseList*:

3> if the current UE configuration includes an SCell with value *sCellIndex*:

4> release the SCell;

8.2.4.18.1.3 Test description

8.2.4.18.1.3.1 Pre-test conditions

System Simulator:

- Cell 1 is PCell, Cell 2 is intra-frequency cell of PCell, and Cell 3 is 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].

8.2.4.18.1.3.2 Test procedure sequence

Table 8.2.4.18.1.3.2-1 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 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 8.2.4.18.1.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 2	Cell 3	Remark
T0	Cell-specific RS EPRE	dBm/15kHz	-85	-91	-97	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).
T1	Cell-specific RS EPRE	dBm/15kHz	-85	-79	-97	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 8.2.4.18.1.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to configure Cell 3 as a SCell.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS transmits an *RRCConnectionReconfiguration* message to setup intra-frequency measurement reporting for event A3 on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
4	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
5	The SS changes Cell 2 level according to row "T1" in Table 8.2.4.18.1.3.2-1.	-	-	-	-
6	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3.	-->	*MeasurementReport*	-	-
7	The SS transmits an *RRCConnectionReconfiguration* message to perform intra-frequency handover and SCell release on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
8	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 2?	-->	*RRCConnectionReconfigurationComplete*	1	P
9	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicates that the UE is in E-UTRA RRC_CONNECTED state on Cell 2?	-	-	1	-

8.2.4.18.1.3.3 Specific message contents

Table 8.2.4.18.1.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.18.1.3.2-2)

Derivation Path: 36.508 Table 4.6.1-8, condition SCell_AddMod

Table 8.2.4.18.1.3.3-2: *SCellToAddMod-r10* (Table 8.2.4.18.1.3.3-1)

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 8.2.4.18.1.3.3-3: *RadioResourceConfigCommonSCell-r10* (Table 8.2.4.18.1.3.3-2)

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 8.2.4.18.1.3.3-4: *RRCConnectionReconfiguration* (step 3, Table 8.2.4.18.1.3.2-2)

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

Table 8.2.4.18.1.3.3-5: *MeasConfig* (Table 8.2.4.18.1.3.3-4)

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-f2		
measObject[2]	MeasObjectEUTRA-GENERIC(f2)	Cell 3	
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfigEUTRA-A3		
}			
measIdToAddModListSEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {			
measId[1]	1		
measObjectId[1]	IdMeasObject-f1		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

Table 8.2.4.18.1.3.3-6: *MeasurementReport* (step 6, Table 8.2.4.18.1.3.2-2)

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		
measResultPCell 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		
locationInfo-r10	Not present		
measResultServFreqList-r10 SEQUENCE (SIZE (1..maxServCell-r10)) OF SEQUENCE {	1 entry		
servFreqId-r10[1]	1	Cell 3	
measResultSCell-r10[1] SEQUENCE {			
rsrpResultSCell-r10	(0..97)		
rsrqResultSCell-r10	(0..34)		
}			
measResultBestNeighCell-r10[1]	Not present		
}			
}			
}			
}			
}			
}			

Table 8.2.4.18.1.3.3-7: *RRCConnectionReconfiguration* (step 7, Table 8.2.4.18.1.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition HO			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
nonCriticalExtension SEQUENCE {			
lateNonCriticalExtension	Not present		
nonCriticalExtension SEQUENCE {			
otherConfig-r9	Not present		
fullConfig-r9	Not present		
nonCriticalExtension SEQUENCE {			
sCellToReleaseList-r10 SEQUENCE (SIZE (1..maxSCell-r10)) OF SEQUENCE {	1 entry		
SCellIndex-r10[1]	1		
}			
sCellToAddModList-r10	Not present		
nonCriticalExtension	Not present		
}			
}			
}			
}			
}			
}			

Table 8.2.4.18.1.3.3-8: *MobilityControlInfo* (Table 8.2.4.18.1.3.3-7)

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		
}			

8.2.4.18.2 CA / RRC connection reconfiguration / Handover / Success / SCell release / Inter-band CA

The scope and description of the present TC is the same as test case 8.2.4.18.1 with the following differences:

- CA configuration: Inter-band CA replaces Intra-band Contiguous CA
- Cells configuration: Cell 10 replaces Cell 3
- Cell 10 is an Inactive SCell according to [18] cl. 6.3.4

8.2.4.19 CA / RRC connection reconfiguration / Handover / Success / PCell Change / SCell no Change

8.2.4.19.1 CA / RRC connection reconfiguration / Handover / Success / PCell Change / SCell no Change / Intra-band Contiguous CA

8.2.4.19.1.1 Test Purpose (TP)

(1)

with { UE having completed the radio bearer establishment and initial security activation procedure, performed the inter-frequency measurement and configured an SCell }
ensure that {
  when { UE receives an *RRCConnectionReconfiguration* message including *mobilityControlInfo* indicating change of the PCell and *sCellToAddModList* with an SCell same from configured SCell representing an intra-band contiguous CA }

```
then { UE sends an RRCConnectionReconfigurationComplete message and does not change SCell }
       }
```

8.2.4.19.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in TS 36.331, clauses 5.3.5.4 and 5.3.10.3b.

[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 PCell 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 PCell to be one on the frequency of the source PCell with a physical cell identity indicated by the *targetPhysCellId*;

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

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> configure lower layers to consider the SCell(s), if configured, to be in deactivated state;

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> 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> if connected as an RN:

3> derive the K_{UPint} 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> if connected as an RN:

3> derive the K_{UPint} 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> if connected as an RN:

2> configure lower layers to apply the integrity protection algorithm and the K_{UPint} key, for current or subsequently established DRBs that are configured to apply integrity protection, if any;

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 s*CellToAddModList*:

2> perform SCell addition or modification as specified in 5.3.10.3b;

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> perform the measurement identity autonomous removal as specified in 5.5.2.2a;

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> set the content of *RRCConnectionReconfigurationComplete* message as follows:

2> if the UE has radio link failure or handover failure information available in *VarRLF-Report* and *plmn-Identity* stored in *VarRLF-Report* is equal to the RPLMN:

3> include *rlf-InfoAvailable*;

2> if the UE has logged measurements available for E-UTRA and *plmn-Identity* stored in *VarLogMeasReport* is equal to the RPLMN:

3> include the *logMeasAvailable*;

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 PCell, 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 PCell (e.g. measurement gaps, periodic CQI reporting, scheduling request configuration, sounding RS configuration), if any, upon acquiring the SFN of the target PCell;

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;

NOTE 4: The UE is not required to determine the SFN of the target PCell by acquiring system information from that cell before performing RACH access in the target PCell.

[TS 36.331, clause 5.3.10.3b]

The UE shall:

1> for each *sCellIndex* value included in the *sCellToAddModList* that is not part of the current UE configuration (SCell addition):

2> add the SCell, corresponding to the *cellIdentification*, in accordance with the received *radioResourceConfigCommonSCell* and *radioResourceConfigDedicatedSCell*;

2> configure lower layers to consider the SCell to be in deactivated state;

1> for each *sCellIndex* value included in the *sCellToAddModList* that is part of the current UE configuration (SCell modification):

2> modify the SCell configuration in accordance with the received *radioResourceConfigDedicatedSCell*;

8.2.4.19.1.3 Test description

8.2.4.19.1.3.1 Pre-test conditions

System Simulator:

- Cell 3 is the PCell, Cell 1 is the SCell to be added and Cell 6 is the inter-frequency neighbour cell.
- Cell 1 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 3 according to [18].

8.2.4.19.1.3.2 Test procedure sequence

Table 8.2.4.19.1.3.2-1 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" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.2.4.19.1.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 3	Cell 6	Remark
T0	Cell-specific RS EPRE	dBm/15k Hz	-91	-85	-97	The power level values are such that measurement results for Cell 3 (M1) and Cell 1 (M2) do not satisfy entry condition for event A3 (M2 < M1).
T1	Cell-specific RS EPRE	dBm/15k Hz	-91	-85	-79	The power level values are such that measurement results for Cell 3 (M1) and Cell 6 (M3) satisfy entry condition for event A3 (M3 > M1).

Table 8.2.4.19.1.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message on Cell 3 to configure Cell 1 as an SCell.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 3.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS transmits an *RRCConnectionReconfiguration* message to setup inter-frequency measurement reporting for event A3 on Cell 3.	<--	*RRCConnectionReconfiguration*	-	-
4	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 3.	-->	*RRCConnectionReconfigurationComplete*	-	-
5	The SS changes Cell 6 level according to row "T1" in Table 8.2.4.19.1.3.2-1.	-	-	-	-
6	The UE transmits a *MeasurementReport* message on Cell 3 to report event A3.	-->	*MeasurementReport*	-	-
7	The SS transmits an *RRCConnectionReconfiguration* message to perform inter-frequency handover.	<--	*RRCConnectionReconfiguration*	-	-
8	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 6?	-->	*RRCConnectionReconfigurationComplete*	1	P
9	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicates that the UE is in E-UTRA RRC_CONNECTED state on Cell 6?	-	-	1	-

8.2.4.19.1.3.3 Specific message contents

Table 8.2.4.19.1.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.19.1.3.2-2)

Derivation Path: 36.508 Table 4.6.1-8, condition SCell_AddMod

Table 8.2.4.19.1.3.3-2: *SCellToAddMod-r10* (Table 8.2.4.19.1.3.3-1)

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 1		
dl-CarrierFreq-r10	Same downlink EARFCN as used for Cell 1		
}			
}			

Table 8.2.4.19.1.3.3-3: *RadioResourceConfigCommonSCell-r10* (Table 8.2.4.19.1.3.3-2)

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 1		
}			
}			

Table 8.2.4.19.1.3.3-4: Void

Table 8.2.4.19.1.3.3-5: *RRCConnectionReconfiguration* (step 3, Table 8.2.4.19.1.3.2-2)

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

Table 8.2.4.19.1.3.3-6: *MeasConfig* (Table 8.2.4.19.1.3.3-5)

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-f2		
measObject[2]	MeasObjectEUTRA-GENERIC(f2)		
measObjectId[3]	IdMeasObject-f3		
measObject[3]	MeasObjectEUTRA-GENERIC(f3)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A3		
reportConfig[1]	ReportConfigEUTRA-A3		
}			
measIdToAddModListSEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {			
measId[1]	1		
measObjectId[1]	IdMeasObject-f3		
reportConfigId[1]	IdReportConfig-A3		
}			
}			

Table 8.2.4.19.1.3.3-7: *MeasurementReport* (step 6, Table 8.2.4.19.1.3.2-2)

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		
measResultPCell SEQUENCE {		Cell 3	
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 6	Cell 6	
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
additionalSI-Info-r9	Not present		
}			
}			
}			
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 1	
rsrpResultSCell-r10	(0..97)		
rsrqResultSCell-r10	(0..34)		
}			
measResultBestNeighCell-r10[1]	Not present		
}			
}			
}			
}			
}			
}			

Table 8.2.4.19.1.3.3-7: *RRCConnectionReconfiguration* (step 7, Table 8.2.4.19.1.3.2-2)

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

Table 8.2.4.19.1.3.3-8: *MobilityControlInfo* (Table 8.2.4.19.1.3.3-7)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 6		
carrierFreq	Same DL EARFCN as used for Cell 6		
}			

8.2.4.19.2 CA / RRC connection reconfiguration / Handover / Success / PCell Change / SCell no Change / Inter-band CA

The scope and description of the present TC is the same as test case 8.2.4.19.1 with the following differences:

- CA configuration: Inter-band CA replaces Intra-band Contiguous CA
- Cells configuration: Cell 10 replaces Cell 1& Cell 1 replaces Cell 6.
- Cell 10 is an Inactive SCell according to [18] cl. 6.3.4

8.2.4.20 CA / RRC connection reconfiguration / Handover / Success / SCell Change

8.2.4.20.1 CA / RRC connection reconfiguration / Handover / Success / SCell Change / Intra-band Contiguous CA

8.2.4.20.1.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment and initial security activation procedure
and performed the inter frequency measurement }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo and
sCellToAddModList with an SCell different from configured SCell }
    then { UE sends an RRCConnectionReconfigurationComplete message and changes SCell }
          }
```

8.2.4.20.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clause 5.3.10.3b.

[TS 36.331, clause 5.3.10.3b]

The UE shall:

1> for each *sCellIndex* value included in the *sCellToAddModList* that is not part of the current UE configuration (SCell addition):

2> add the SCell, corresponding to the *cellIdentification*, in accordance with the received *radioResourceConfigCommonSCell* and *radioResourceConfigDedicatedSCell*;

2> configure lower layers to consider the SCell to be in deactivated state;

1> for each *sCellIndex* value included in the *sCellToAddModList* that is part of the current UE configuration (SCell modification):

2> modify the SCell configuration in accordance with the received *radioResourceConfigDedicatedSCell*;

8.2.4.20.1.3 Test description

8.2.4.20.1.3.1 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 1 and Cell 3 are Inactive SCells 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].

8.2.4.20.1.3.2 Test procedure sequence

Table 8.2.4.20.1.3.2-1 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" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.2.4.20.1.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 3	Cell 12	Remark
T0	Cell-specific RS EPRE	dBm/15k Hz	-85	-91	-97	The power level values are such that measurement results for Cell 12 (M12) and Cell 3 (M2) do not satisfy entry condition for event A6.
T1	Cell-specific RS EPRE	dBm/15k Hz	-85	-85	-79	The power level values are such that measurement results for Cell 12 (M12) and Cell 3 (M3) satisfy entry condition for event A6.

Table 8.2.4.20.1.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	Wait 1 s to allow for the switching of cells.	-	-	-	-
2	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to configure Cell 3 as an SCell.	<--	*RRCConnectionReconfiguration*	-	-
3	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
	EXCEPTION: If UE does not support FGI bit 111, i.e. Event A6, the following step 4 to step 7 except step 6 should not be executed				
4	The SS transmits an *RRCConnectionReconfiguration* message to setup intra-frequency measurement reporting for event A6 on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
5	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
6	The SS changes power level according to row "T1" in Table 8.2.4.20.3.2-1.	-	-	-	-
7	The UE transmits a *MeasurementReport* message on Cell 1 to report event A6.	-->	*MeasurementReport*	-	-
8	The SS transmits an *RRCConnectionReconfiguration* message to perform inter-frequency handover to Cell 12 with original SCell Cell 3 release and new SCell Cell1addition.	<--	*RRCConnectionReconfiguration*	-	-
9	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 12?	-->	*RRCConnectionReconfigurationComplete*	1	P
10	The UE transmits a TRACKING AREA UPDATE REQUEST message to update the registration of the actual tracking area.	-	-	-	-
11	The SS responds with TRACKING AREA UPDATE ACCEPT message.	-	-	-	-
12	The UE transmits a TRACKING AREA UPDATE COMPLETE.	-	-	-	-
13	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicates that the UE is in E-UTRA RRC_CONNECTED state on Cell 12?	-	-	1	-

8.2.4.20.1.3.3 Specific message contents

Table 8.2.4.20.1.3.3-1: *RRCConnectionReconfiguration* (step 2, Table 8.2.4.20.1.3.2-2)

Derivation Path: 36.508 Table 4.6.1-8, condition SCell_AddMod

Table 8.2.4.20.1.3.3-2: *SCellToAddMod-r10* (Table 8.2.4.20.1.3.3-1)

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 8.2.4.20.1.3.3-3: *RadioResourceConfigCommonSCell-r10* (Table 8.2.4.20.1.3.3-2)

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 8.2.4.20.1.3.3-4: *RRCConnectionReconfiguration* (step 4, Table 8.2.4.20.1.3.2-2)

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

Table 8.2.4.20.1.3.3-5: *MeasConfig* (Table 8.2.4.20.1.3.3-4)

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)		
}			
{			
measObjectId[2]	IdMeasObject-f2		
measObject[2]	MeasObjectEUTRA-GENERIC(f2)		
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A6		
reportConfig[1]	ReportConfigEUTRA-A6		
}			
measIdToAddModListSEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {			
measId[1]	1		
measObjectId[2]	IdMeasObject-f2		
reportConfigId[1]	IdReportConfig-A6		
}			
}			

Table 8.2.4.20.1.3.3-6: *MeasurementReport* (step 7, Table 8.2.4.20.1.3.2-2)

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		
measResultPCell 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 12	Cell 12	
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
additionalSI-Info-r9	Not present		
}			
}			
}			
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]	Not present		
}			
}			
}			
}			
}			
}			

Table 8.2.4.20.1.3.3-7: *RRCConnectionReconfiguration* (step 8, Table 8.2.4.20.1.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition HO			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
nonCriticalExtension SEQUENCE {			
lateNonCriticalExtension			
nonCriticalExtension SEQUENCE {			
nonCriticalExtension SEQUENCE {			
SCellToReleaseList-r10 ::= SEQUENCE (SIZE (1..maxSCell-r10)) OF SEQUENCE {			
SCellIndex-r10[1]	1		
}			
SCellToAddModList-r10	SCellToAddMod-r10-f1		
}			
}			
}			
}			
}			
}			
}			

Table 8.2.4.20.1.3.3-8: *MobilityControlInfo* (Table 8.2.4.20.1.3.3-7)

Derivation Path: clause 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 12		
carrierFreq	Same DL EARFCN as used for Cell 12		
}			

Table 8.2.4.20.1.3.3-9: SCellToAddMod-r10-f1 (Table 8.2.4.20.1.3.3-7)

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 1		
dl-CarrierFreq-r10[1]	Same downlink EARFCN as used for Cell 1		
}			
radioResourceConfigCommonSCell-r10[1]	RadioResourceConfigCommonSCell-r10-f1		
}			

Table 8.2.4.20.1.3.3-10: *RadioResourceConfigCommonSCell-r10-f1* (Table 8.2.4.20.1.3.3-9)

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 1		
}			

8.2.4.20.2 CA / RRC connection reconfiguration / Handover / Success / SCell Change / Inter-band CA

The scope and description of the present TC is the same as test case 8.2.4.20.1 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 1 and Cell 10 are Inactive SCells according to [18] cl. 6.3.4

8.2.4.21 CA / RRC connection reconfiguration / Handover / Success / SCell release

8.2.4.21.1 CA / RRC connection reconfiguration / Handover / Success / SCell release / Intra-band Contiguous CA

8.2.4.21.1.1 Test Purpose (TP)

(1)

```
with { UE having completed the radio bearer establishment and initial security activation procedure,
performed the inter-frequency measurement and configured an SCell }
ensure that {
  when { UE receives an RRCConnectionReconfiguration message including a mobilityControlInfo and
including sCellToReleaseList with an sCellIndex set to the configured SCell }
    then { UE sends an RRCConnectionReconfigurationComplete message }
            }
```

8.2.4.21.1.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.3.5.4 and 5.3.10.3a.

[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 PCell 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 PCell to be one on the frequency of the source PCell with a physical cell identity indicated by the *targetPhysCellId*;

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

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> configure lower layers to consider the SCell(s), if configured, to be in deactivated state;

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> 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> if connected as an RN:

3> derive the K_{UPint} 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> if connected as an RN:

3> derive the K_{UPint} 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> if connected as an RN:

2> configure lower layers to apply the integrity protection algorithm and the K_{UPint} key, for current or subsequently established DRBs that are configured to apply integrity protection, if any;

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 s*CellToAddModList*:

2> perform SCell addition or modification as specified in 5.3.10.3b;

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> perform the measurement identity autonomous removal as specified in 5.5.2.2a;

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> set the content of *RRCConnectionReconfigurationComplete* message as follows:

2> if the UE has radio link failure or handover failure information available in *VarRLF-Report* and *plmn-Identity* stored in *VarRLF-Report* is equal to the RPLMN:

3> include *rlf-InfoAvailable*;

2> if the UE has logged measurements available for E-UTRA and *plmn-Identity* stored in *VarLogMeasReport* is equal to the RPLMN:

3> include the *logMeasAvailable*;

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 PCell, 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 PCell (e.g. measurement gaps, periodic CQI reporting, scheduling request configuration, sounding RS configuration), if any, upon acquiring the SFN of the target PCell;

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;

NOTE 4: The UE is not required to determine the SFN of the target PCell by acquiring system information from that cell before performing RACH access in the target PCell.

[TS 36.331, clause 5.3.10.3a]

The UE shall:

1> if the release is triggered by reception of the *sCellToReleaseList*:

2> for each *sCellIndex* value included in the *sCellToReleaseList*:

3> if the current UE configuration includes an SCell with value *sCellIndex*:

4> release the SCell;

1> if the release is triggered by RRC connection re-establishment:

2> release all SCells that are part of the current UE configuration;

8.2.4.21.1.3 Test description

8.2.4.21.1.3.1 Pre-test conditions

System Simulator:

- Cell 1 is the PCell, Cell 3 is the SCell to be added and Cell 6 is the inter-frequency neighbour cell of PCell.
- 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].

8.2.4.21.1.3.2 Test procedure sequence

Table 8.2.4.21.1.3.2-1 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" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.2.4.21.1.3.2-1: Time instances of cell power level and parameter changes

	Parameter	Unit	Cell 1	Cell 3	Cell 6	Remark
T0	Cell-specific RS EPRE	dBm/15k Hz	-85	-91	-97	The power level values are such that measurement results for Cell 1 (M1) and Cell 6 (M6) do not satisfy entry condition for event A5.
T1	Cell-specific RS EPRE	dBm/15k Hz	-85	-85	-79	The power level values are such that measurement results for Cell 1 (M1) and Cell 6 (M6) satisfy entry condition for event A5.

Table 8.2.4.21.1.3.2-2: Main behaviour

St	Procedure	Message Sequence		TP	Verdict
		U - S	Message		
1	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to configure Cell 3 as an SCell.	<--	*RRCConnectionReconfiguration*	-	-
2	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS transmits an *RRCConnectionReconfiguration* message to setup inter-frequency measurement reporting for event A5 on Cell 1.	<--	*RRCConnectionReconfiguration*	-	-
4	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
5	The SS changes Cell 6 level according to row "T1" in Table 8.2.4.21.1.3.2-1.	-	-	-	-
6	The UE transmits a *MeasurementReport* message on Cell 1 to report event A5.	-->	*MeasurementReport*	-	-
7	The SS transmits an *RRCConnectionReconfiguration* message to perform inter-frequency handover to Cell 6 and release SCell Cell 3.	<--	*RRCConnectionReconfiguration*	-	-
8	Check: Does the UE transmit an *RRCConnectionReconfigurationComplete* message on Cell 6?	-->	*RRCConnectionReconfigurationComplete*	1	P
9	Check: Does the test result of generic test procedure in TS 36.508 subclause 6.4.2.3 indicates that the UE is in E-UTRA RRC_CONNECTED state on Cell 6?	-	-	1	-

8.2.4.21.1.3.3 Specific message contents

Table 8.2.4.21.1.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.21.1.3.2-2)

Derivation Path: 36.508 Table 4.6.1-8, condition SCell_AddMod

Table 8.2.4.21.1.3.3-2: *SCellToAddMod-r10* (Table 8.2.4.21.1.3.3-1)

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 8.2.4.21.1.3.3-3: *RadioResourceConfigCommonSCell-r10* (Table 8.2.4.21.1.3.3-2)

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 8.2.4.21.1.3.3-4: *RRCConnectionReconfiguration* (step 3, Table 8.2.4.21.1.3.2-2)

Derivation Path: 36.508 Table 4.6.1-8, condition MEAS

Table 8.2.4.21.1.3.3-5: *MeasConfig* (step 3, Table 8.2.4.21.1.3.2-4)

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 {	3 entries		
measObjectId[1]	IdMeasObject-f1		
measObject[1]	MeasObjectEUTRA-GENERIC(f1)	Cell 1	
measObjectId[2]	IdMeasObject-f2		
measObject[2]	MeasObjectEUTRA-GENERIC(f2)	Cell 3	
measObjectId[3]	IdMeasObject-f3		
measObject[3]	MeasObjectEUTRA-GENERIC(f3)	Cell 6	
}			
reportConfigToAddModList SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId[1]	IdReportConfig-A5		
reportConfig[1]	ReportConfig-A5		
}			
measIdToAddModList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
measObjectId[1]	IdMeasObject-f3		
reportConfigId[1]	IdReportConfig-A5		
}			
}			

Table 8.2.4.21.1.3.3-6: *ReportConfig-A5* (step 3, Table 8.2.4.21.1.3.2-5)

Derivation path: 36.508 clause 4.6.6 table ReportConfigEUTRA-A5(-76, -88)			
Information Element	**Value/Remark**	**Comment**	**Condition**
ReportConfigEUTRA ::= SEQUENCE {			
reportAmount	infinity		
}			

Table 8.2.4.21.1.3.3-7: *MeasurementReport* (step 6, Table 8.2.4.21.1.3.2-2)

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		
measResultPCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
measResultNeighCells CHOICE {			
measResultListEUTRA SEQUENCE (SIZE (1..maxCellReport)) OF SEQUENCE {	1 entry		
physCellId[1]	PhysicalCellIdentity of Cell 6		
cgi-Info[1]	Not present		
measResult[1] SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
additionalSI-Info-r9	Not present		
}			
}			
}			
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]	Not present		
}			
}			
}			
}			
}			
}			

Table 8.2.4.21.1.3.3-8: *RRCConnectionReconfiguration* (step 7, Table 8.2.4.21.1.3.2-2)

Derivation Path: 36.508, Table 4.6.1-8, condition HO			
Information Element	**Value/remark**	**Comment**	**Condition**
RRCConnectionReconfiguration ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
rrcConnectionReconfiguration-r8 SEQUENCE {			
MeasConfig ::= SEQUENCE {			
measObjectToRemoveList SEQUENCE (SIZE (1.. maxObjectId)) OF SEQUENCE {	3 entries		
measObjectId[1]	IdMeasObject-f1	Cell 1	
measObjectId[2]	IdMeasObject-f2	Cell 3	
measObjectId[3]	IdMeasObject-f3	Cell 6	
}			
reportConfigToRemoveList ::= SEQUENCE (SIZE (1..maxReportConfigId)) OF SEQUENCE {	1 entry		
reportConfigId	IdReportConfig-A5		
}			
measIdToRemoveList SEQUENCE (SIZE (1..maxMeasId)) OF SEQUENCE {	1 entry		
measId[1]	1		
}			
}			
nonCriticalExtension SEQUENCE {			
lateNonCriticalExtension			
nonCriticalExtension SEQUENCE {			
nonCriticalExtension SEQUENCE {			
SCellToReleaseList-r10 ::= SEQUENCE (SIZE (1..maxSCell-r10)) OF SEQUENCE {			
SCellIndex-r10[1]	1		
}			
SCellToAddModList-r10	Not present		
}			
}			
}			
}			
}			
}			
}			

Table 8.2.4.21.1.3.3-9: *MobilityControlInfo* (Table 8.2.4.21.1.3.3-8)

Derivation Path: 36.508, Table 4.6.5-1			
Information Element	**Value/remark**	**Comment**	**Condition**
MobilityControlInfo ::= SEQUENCE {			
targetPhysCellId	PhysicalCellIdentity of Cell 6		
carrierFreq	Same DL EARFCN as used for Cell 6		
}			

8.2.4.21.2 CA / RRC connection reconfiguration / Handover / Success / SCell release / Inter-band CA

The scope and description of the present TC is the same as test case 8.2.4.21.1 with the following differences:

- CA configuration: Inter-band CA replaces Intra-band Contiguous CA
- Cells configuration:
- Cell 10 replaces Cell 3, and then

- If f6 is supported as per TS 36.508 Table 6.2.3.2-2 by the band combination in which the test case is executed, then Cell 28 replaces Cell 6; otherwise Cell 3 replaces Cell 6.

8.2.4.22 RRC connection reconfiguration / Handover / MFBI / Target cell broadcasting information disregarded by the UE

8.2.4.22.1 Test Purpose (TP)

(1)

```
with {UE in RRC_CONNECTED and T311 is not running, and the UE supports multi-band cells as defined
by bit 31 in featureGroupIndicators}
ensure that {
  when { UE receives freqBandIndicator and multiBandInfoList from SystemInformationBlockType1 and
additionalSpectrumEmission and ul-CarrierFreq from SystemInformationBlockType2 }
    then { the UE disregard the related system information fields and continues connected mode
operations}
}
```

8.2.4.22.2 Conformance requirements

References: The conformance requirements covered in the present TC are specified in: TS 36.331, clauses 5.2.2.7, 5.2.2.9. Unless otherwise stated these are Rel-8 requirements.

[TS 36.331, clause 5.2.2.7]

Upon receiving the *SystemInformationBlockType1* either via broadcast or via dedicated signalling, the UE shall:

1> if in RRC_CONNECTED while T311 is not running, and the UE supports multi-band cells as defined by bit 31 in *featureGroupIndicators*:

2> disregard the *freqBandIndicator* and *multiBandInfoList*, if received, while in RRC_CONNECTED;

2> forward the *cellIdentity* to upper layers;

2> forward the *trackingAreaCode* to upper layers;

1> else:

2> if the frequency band indicated in the *freqBandIndicator* is part of the frequency bands supported by the UE; or

2> if the UE supports *multiBandInfoList*, and if one or more of the frequency bands indicated in the *multiBandInfoList* are part of the frequency bands supported by the UE:

3> forward the *cellIdentity* to upper layers;

3> forward the *trackingAreaCode* to upper layers;

2> else:

3> consider the cell as barred in accordance with TS 36.304 [4]; and

3> perform barring as if *intraFreqReselection* is set to *notAllowed*, and as if the *csg-Indication* is set to *FALSE*;

[TS 36.331, clause 5.2.2.9]

Upon receiving *SystemInformationBlockType2*, the UE shall:

1> apply the configuration included in the *radioResourceConfigCommon*;

1> if upper layers indicate that a (UE specific) paging cycle is configured:

2> apply the shortest of the (UE specific) paging cycle and the *defaultPagingCycle* included in the *radioResourceConfigCommon*;

1> if the *mbsfn-SubframeConfigList* is included:

2> consider that DL assignments may occur in the MBSFN subframes indicated in the *mbsfn-SubframeConfigList* under the conditions specified in [23, 7.1];

1> apply the specified PCCH configuration defined in 9.1.1.3;

1> not apply the *timeAlignmentTimerCommon*;

1> if in RRC_CONNECTED and UE is configured with RLF timers and constants values received within *rlf-TimersAndConstants*:

2> not update its values of the timers and constants in *ue-TimersAndConstants* except for the value of timer T300;

1> if in RRC_CONNECTED while T311 is not running; and the UE supports multi-band cells as defined by bit 31 in *featureGroupIndicators*:

2> disregard the *additionalSpectrumEmission* and *ul-CarrierFreq*, if received, while in RRC_CONNECTED;

8.2.4.22.3 Test description

8.2.4.22.3.1 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].
- Cell 2: freqBandIndicator and multiBandInfoList from SystemInformationBlockType1 and additionalSpectrumEmission and ul-CarrierFreq from SystemInformationBlockType2 are set to values not supported by the UE

8.2.4.22.3.2 Test procedure sequence

Table 8.2.4.22.3.2-1 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" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 8.2.4.22.3.2-1: 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).

Table 8.2.4.22.3.2-2: 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.	-->	*RRCConnectionReconfigurationComplete*	-	-
3	The SS changes Cell 1 and Cell 2 parameters according to the row "T1" in table 8.2.4.22.3.2-1.	-	-	-	-
4	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP, RSRQ value for Cell 2.	-->	*MeasurementReport*	-	-
5	The SS transmits an *RRCConnectionReconfiguration* 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 using common preamble to confirm the successful completion of the intra frequency handover?	-->	*RRCConnectionReconfigurationComplete*	-	-
7	Wait 10 secs in order that the UE receives system information from the Cell 2 and ignores not supported freqBandIndicator and multiBandInfoList from SystemInformationBlockType1 and additionalSpectrumEmission and ul-CarrierFreq from SystemInformationBlockType2.	-	-	-	-
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 2?	-	-	1	P

8.2.4.22.3.3 Specific message contents

Table 8.2.4.22.3.3-1: *RRCConnectionReconfiguration* (step 1, Table 8.2.4.22.3.2-2)

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

Table 8.2.4.22.3.3-2: *MeasConfig* (Table 8.2.4.22.3.3-1)

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 8.2.4.22.3.3-3 *MeasurementReport* (step 4, Table 8.2.4.22.3.2-2)

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 8.2.4.22.3.3-4: *RRCConnectionReconfiguration* (step 5, Table 8.2.4.22.3.2-2)

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

Table 8.2.4.22.3.3-5: *MobilityControlInfo* (Table 8.2.4.22.3.3-4)

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		
}			