13.2 RRC connection reconfiguration

13.2.1 RRC connection reconfiguration / E-UTRA to E-UTRA

13.2.1.1 Test Purpose (TP)

(1)

```
with { UE has a default EPS bearer context }
ensure that {
  when { UE receives donwlink data on the radio bearer associated with the default EPS bearer
context }
    then { UE delivers the downlink data to upper layers }
              }
```

(2)

```
with { UE has a default EPS bearer context }
ensure that {
  when { uplink data are submitted for transmission }
    then { UE transmits the uplink data on the radio bearer associated with the default EPS bearer
context }
              }
```

(3)

```
with { UE has a default EPS bearer context and successful completion of the intra-frequency handover
}
ensure that {
  when { UE receives donwlink data on the radio bearer associated with the default EPS bearer
context }
    then { UE delivers the downlink data to upper layers }
              }
```

(4)

```
with { UE has a default EPS bearer context and successful completion of the intra-frequency handover
}
ensure that {
  when { uplink data are submitted for transmission }
    then { UE transmits the uplink data on the radio bearer associated with the default EPS bearer
context }
              }
```

13.2.1.2 Conformance requirements

Same Conformance requirements as in clause 8.2.4.2.

References: The conformance requirements covered in the present TC are specified in: TS23.401, clause 5.5.1.1.1.

[TS 23.401, clause 5.5.1.1.1]

These procedures are used to hand over a UE from a source eNodeB to a target eNodeB using the X2 reference point. In these procedures the MME is unchanged. Two procedures are defined depending on whether the Serving GW is unchanged or is relocated. In addition to the X2 reference point between the source and target eNodeB, the procedures rely on the presence of S1-MME reference point between the MME and the source eNodeB as well as between the MME and the target eNodeB.

The handover preparation and execution phases are performed as specified in TS 36.300 [5].

If the serving PLMN changes during handover, the source eNB shall initiate an S1-based handover instead of an X2-based handover.

When the UE receives the handover command it will remove any EPS bearers for which it did not receive the corresponding EPS radio bearers in the target cell. As part of handover execution, downlink packets are forwarded from the source eNodeB to the target eNodeB. When the UE has arrived to the target eNodeB, downlink data forwarded from the source eNodeB can be sent to it. Uplink data from the UE can be delivered via the (source) Serving GW to the PDN GW. Only the handover completion phase is affected by a potential change of the Serving GW, the handover preparation and execution phases are identical.

If the MME receives a rejection to a NAS procedure (e.g. dedicated bearer establishment/modification/release; location reporting control; NAS message transfer; etc.) from the eNodeB with an indication that an X2 handover is in progress (see TS 36.300 [5]), the MME shall reattempt the same NAS procedure either when the handover is complete or the handover is deemed to have failed. The failure is known by expiry of the timer guarding the NAS procedure.

13.2.1.3 Test description

13.2.1.3.1 Pre-test conditions

System Simulator:

- Cell 1 and Cell 2

UE:

None.

Preamble:

- The UE is in state Generic RB Established (state 4) on Cell 1 according to [18] using the UE TEST LOOP MODE B.

13.2.1.3.2 Test procedure sequence

Table 13.2.1.3.2-1 illustrates the downlink power levels and other changing parameters to be applied for the cells at various time instants of the test execution. Row marked "T0" denotes the initial conditions after Preamble, while columns marked "T1" is to be applied subsequently. The exact instants on which these values shall be applied are described in the texts in this clause.

Table 13.2.1.3.2-1: 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 value shall be such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy exit condition for event A3 (M2 + Hys < M1).
T1	Cell-specific RS EPRE	dBm/15k Hz	-91	-85	The power level value shall be such that measurement results for Cell 1 (M1) and Cell 2 (M2) satisfy entry condition for event A3 (M2 - Hys > M1).

Table 13.2.1.3.2-2: 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.	<--	IP packet	-	-
2	Check: Does the UE loop back the IP packet on the DRB associated with the default EPS bearer context on Cell 1?	-	-	1,2	P
3	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to setup intra frequency measurement.	<--	*RRCConnectionReconfiguration*	-	-
4	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 1.	-->	*RRCConnectionReconfigurationComplete*	-	-
5	The SS changes Cell 1 and Cell 2 parameters according to the row "T1" in table 13.2.1.3.2-1	-	-	-	-
6	The UE transmits a *MeasurementReport* message on Cell 1 to report event A3 with the measured RSRP and RSRQ value for Cell 2.	-->	*MeasurementReport*	-	-
7	The SS transmits an *RRCConnectionReconfiguration* message on Cell 1 to order the UE to perform intra frequency handover to Cell 2.	<--	*RRCConnectionReconfiguration*	-	-
8	The UE transmits an *RRCConnectionReconfigurationComplete* message on Cell 2 to confirm the successful completion of the intra frequency handover.	-->	*RRCConnectionReconfigurationComplete*	-	-
9	The SS transmits one IP packet to the UE on the DRB associated with the default EPS bearer context on Cell 2.	<--	IP packet	-	-
10	Check: Does the UE loop back the IP packet on the DRB associated with the default EPS bearer context on Cell 2?	-	-	3,4	P

13.2.1.3.3 Specific message contents

Table 13.2.1.3.3-1: ACTIVATE TEST MODE (preamble)

Derivation Path: 36.508, Table 4.7A-1, condition UE TEST LOOP MODE B

Table 13.2.1.3.3-2: *RRCConnectionReconfiguration* (Step 3, Table 13.2.1.3.2-2)

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

Table 13.2.1.3.3-3: MeasurementConfiguration (Step 3, Table 13.2.1.3.2-2)

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

Table 13.2.1.3.3-4: *MeasurementReport* (Step 6, Table 13.2.1.3.2-2)

Derivation Path: 36.508, Table 4.6.1-5			
Information Element	**Value/remark**	**Comment**	**Condition**
MeasurementReport ::= SEQUENCE {			
criticalExtensions CHOICE {			
c1 CHOICE{			
measurementReport-r8 SEQUENCE {			
measResults SEQUENCE {			
measId	1		
measResultServCell SEQUENCE {			
rsrpResult	(0..97)		
rsrqResult	(0..34)		
}			
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 13.2.1.3.3-5: *RRCConnectionReconfiguration* (Step 7, Table 13.2.1.3.2-2)

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

Table 13.2.1.3.3-6: *MobilityControlInfo* (step 7, Table 13.2.1.3.2-2)

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

13.3.1 Intra-system connection re-establishment

13.3.1.1 Intra-system connection re-establishment / Radio link recovery while T310 is running

13.3.1.1.1 Test Purpose (TP)

(1)

```
with { UE in E-UTRA RRC_CONNECTED state}
ensure that {
  when { UE detects physical layer problem }
   then { UE starts timer T310 and does not send any RRC connection re-establishment procedure while
T310 is running }
            }
```

(2)

```
with { UE in E-UTRA RRC_CONNECTED state and has data to transmit}
ensure that {
  when { UE detects radio link recovery while T310 is running}
   then { UE resumes the RRC connection without explicit signalling and continues data transfer}
            }
```

13.3.1.1.2 Conformance requirements

Refer to TS 36.523-1 clause 8.5.1.5.2.

13.3.1.1.3 Test description

13.3.1.1.3.1 Pre-test conditions

System Simulator:

- Cell 1

UE:

None.

Preamble:

- The condition SRB2-DRB(1,0) is used for step 8 in 4.5.3A.3 according to [18].
- The UE is in state Loopback Activated (state 4) on Cell 1 according to [18] using the UE TEST LOOP MODE B.

13.3.1.1.3.2 Test procedure sequence

Table 13.3.1.1.3.2-1 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, 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.